transactions of the ASME

SOCIETY RECORDS ASME ANNUAL AM-5 JANUARY 1982

indexes to 1981 publications

WHERE TO FIND ASME TRANSACTIONS

INDEXES TO ASME PAPERS AND PUBLICATIONS

INDEX TO MECHANICAL ENGINEERING

INDEX TO TRANSACTIONS OF THE ASME

PUBLISHED BY THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

transactions of the ASME

Published by
The American Society of
Mechanical Engineers

Volume 104
JANUARY 1982

indexes to 1981 publications

EDITORIAL STAFF

Director, Technical Publishing, JOS. SANSONE
Editor, CHARLES W. BEARDSLEY
Associate Editor, HAROLD BREDIN
Staff Editor, SAMUEL WALTERS
Technical Writer/Editor, J. FAGENBAUM
Associate Editor, ELIZ. CALVELLI
News Editor, JOYCE MOSKOWITZ
Assistant Editor, DIANE E. W. RAFFERTY
Contributing Editor, FRITZ HIRSCHFELD
Copy/Production Editor, VICKI KOESTLER
Art Editor, GALINA SAZONOV
Design Consultant, MARK SNYDER
Transactions Managing Editor, C. MONAHAN,
Senior Production Editor, H. JARDINE,
Production Editors, S. MAGIDA, L. ROSENFELD, J. RUMMEL
Editorial Production Assistant, BETH DARCHI

BOARD ON COMMUNICATIONS

Chairman and Vice President
MICHAEL J. RABINS
Members-at-Large
W. BEGELL
J. CALLAHAN
D. KOENIG
M. KUTZ
F. LANDIS
J. LOCKE
J. ORTLOFF
C. PHILLIPS
K. REID

Business Staff
345 East 47th St.
New York, NY 10017
(212) 644-7789
Mng. Div., Pub., J. J. FREY

OFFICERS OF THE ASME
President, ROBERT B. GAITHER
Exec. Div. & Sec'y.
BURKE E. NELSON
Treasurer,
ROBERT A. BENNETT

Published by The American Society of Mechanical Engineers. The editorial department is located at the headquarters of the Society, 345 East Forty-Seventh Street, New York, N. Y. 10017. Cable address, "Mechaneer," New York.

TRANSACTIONS OF THE ASME is indexed by the Engineering Index, Inc.

Where You Will Find ASME Transactions

In United States and Territories. SR-1

In Other Countries SR-5

Indexes to ASME Publications Issued in 1981 . . . . SR-6

ASME Miscellaneous Papers, 1980 . . . . . SR-7

Index to Mechanical Engineering, 1981 . . . . . SR-33

Index to Transactions of the ASME, 1981 . . . . . SR-145

Where You Will Find the ASME Transactions

In United States and Territories

ALABAMA

Auburn	Auburn University Serials Dept.-Library Library, Dept. of Mech. Engrg.
Birmingham	University of Alabama in Birmingham Sterne Library
Huntsville	University of Alabama in Huntsville Serials Dept.-Library
Tuskegee	Tuskegee Institute School of Engineering Library
University	University of Alabama Engineering Library

ARIZONA

Flagstaff	Northern Arizona University Library-Acquisitions
Tempe	Arizona State University Arizona State University Library Mechanical Engineering Library Library Periodicals
Tucson	University of Arizona Main Library Mech. Engrg. Dept. Library

ARKANSAS

Fayetteville	University of Arkansas University Library—Serials Dept.

CALIFORNIA

Berkeley	University of California, Berkeley General Library Dept. of Mechanical Engineering
Chico	California State University, Chico University Library
Davis	University of California, Davis University Library
Fresno	California State University, Fresno Student Library—School of Engineering Library-Periodicals Dept.
Fullerton	California State University, Fullerton Library/Periodicals Engineering Division Library, Room E 100
Inglewood	Northrop University Alumni Library
Irvine	University of California, Irvine General Library—Serials Dept.
Long Beach	California State University at Long Beach Univ. Library—Serials Dept. Mechanical Engineering Resource Center
Los Angeles	California State University at Los Angeles John F. Kennedy Memorial Library Loyola Marymount University Charles Van der Ahe Library—Periodicals Dept. University of California ASME Student Reference Room Library Room 4173 Engineering Bldg. I University of Southern California Engineering Library
Monterey	U.S. Naval Postgraduate School Head Library—Code 0212 Mechanical Engineering Library
Northridge	California State University at Northridge Library—Serials Dept.
Pasadena	California Institute of Technology Millikan Memorial Library
Pomona	California State Polytechnic University, Pomona Library
Sacramento	California State University, Sacramento Library Serials Dept.
San Francisco	San Francisco State University Main Library
San Luis Obispo	California State Polytechnic University, San Luis Obispo Library
Santa Barbara	University of California, Santa Barbara Elect. Engrg. Bldg. Serials/Library G
Santa Clara	University of Santa Clara Varsi Library
San Diego	San Diego State University Serials Department
San Jose	San Jose State University Library/Serials Dept.
Stanford	Stanford University Durand Room—Mechanical Engrg. Dept.

COLORADO

Boulder	University of Colorado Libraries—Serials Department
Fort Collins	Colorado State University Morgan Library
Golden	Colorado School of Mines Arthur Lake Library
USAF Academy	United States Air Force Academy Academy Library

CONNECTICUT

Bridgeport	University of Bridgeport Library—Periodicals Dept. Mechanical Engineering Dept. Library
Storrs	University of Connecticut Wilbur Cross Library Engineering Library
West Hartford	University of Hartford Science Librarian
West Haven	University of New Haven Library

DELAWARE

Newark	University of Delaware Morris Library—Serial Dept. Mech. & Aerospace Engrg. Library—Evans Hall

DISTRICT OF COLUMBIA

Washington	Catholic University of America Engineering Library George Washington University Library Howard University Engineering and Architectural Library Library of Congress National Bureau of Standards Library U.S. Patent Office Scientific Library

FLORIDA

Boca Raton	Florida Atlantic University Main Library Mech. Engrg. Dept.—Student Library
Coral Gables	University of Miami Main Library-Periodicals Dept.
Gainesville	University of Florida Engineering Sciences Library
Melbourne	Florida Institute of Technology Mechanical/Electrical Engineering Library
Orlando	Univ. of Central Florida Mechanical Engrg. & Aerospace Science Library—Serials
Tampa	University of South Florida Main Library

GEORGIA

Atlanta	Georgia Institute of Technology Library
Marietta	Southern Technical Institute Technical Library
Savanah	Savanah State College Dept. Engrg. Tech. Lib.

HAWAII

Honolulu	University of Hawaii Mechanical Engineering Dept. Library Graduate Research Library

IDAHO

Moscow	University of Idaho Grad. Res. Library Mechanical Engineering Dept. Library

ILLINOIS

Chicago	Illinois Institute of Technology Library—Technology Center University of Illinois at Chicago Circle ASME Student Library
Evanston	Northwestern University Technological Institute Library
Peoria	Bradley University Library—Periodicals Department
Urbana	University of Illinois Library—Serials Dept.

INDIANA

Angola	Tri-State University Perry T. Ford Memorial Library
Evansville	University of Evansville Clifford Memorial Library Engineering Library
Fort Wayne	Indiana-Purdue Univ. at Fort Wayne Library Serials
Hammond	Purdue University-Calumet Campus Main Library
Indianapolis	Indiana University University Library
Lafayette	Purdue University Library Series Unit
Notre Dame	University of Notre Dame Engineering Library
Terre Haute	Rose-Hulman Institute Library
Valparaiso	Valparaiso University University Library

IOWA

Ames	Iowa State University Science Library
Iowa City	State University of Iowa University Library—Serials Acquisition Dept.

KANSAS

Lawrence	University of Kansas Serials Department Mechanical Engineering Dept. Library
Manhattan	Kansas State University Library Serials Dept.
Wichita	Wichita State University Library Serials—Acquisition Dept. Mechanical Engineering Dept. Library

KENTUCKY

Bowling Green	Western Kentucky University Ogden College of Sci. & Tech. Science Library Mechanical Engineering Tech. Library
Lexington	University of Kentucky Engineering Library
Louisville	University of Louisville Speed Scientific School Library

LOUISIANA

Baton Rouge	Louisiana State University Librarian Southern University University Library Engineering Library
Lafayette	University of Southwestern Louisiana Dupre Library
New Orleans	Tulane University Howard Tilton Memorial Library
Ruston	Louisiana Tech University Prescott Library

MAINE

Orono	University of Maine Library

MARYLAND

Annapolis	U.S. Naval Academy Library
College Park	University of Maryland Engineering and Physical Sciences Library Mechanical Engineering Dept. Library

MASSACHUSETTS

Amherst	University of Massachusetts Library—Serials Dept.
Boston	Northeastern University Dodge Library Mechanical Engineering Dept. Library
Cambridge	Massachusetts Institute of Technology Library—Serials and Journals
Lowell	University of Lowell Alumni Memorial Library
Medford	Tufts University University Library Mech. Engrg. Library
North Dartmouth	Southeastern Massachusetts University Engrg. Dept. Library Serial and Periodicals Library
Springfield	Western New England College Churchill Library—Ref. Room
Worcester	Worcester Polytechnic Institute Gordon Library

MICHIGAN

Ann Arbor	University of Michigan Engineering Library
Dearborn	University of Michigan-Dearborn Main Campus Library
Detroit	University of Detroit Library Wayne State University Kresge-Hooker Scientific Library
East Lansing	Michigan State University Library—Serials Dept. Engineering Library
Flint	General Motors Institute General Motors Institute Library
Houghton	Michigan Technological University Library—Serials Dept.
Sault Ste. Marie	Lake Superior State College Main Library Dept. of Engineering Technology Library
Southfield	Lawrence Inst. of Technology Mech. Engrg. Dept.

MINNESOTA

Minneapolis	University of Minnesota Mrs. D. Burnham-Libm. Design Engineering Library

MISSISSIPPI

State College	Mississippi State University University Library
University	University of Mississippi Mechanical Engineering Library-CH Bldg.

MISSOURI

Columbia	University of Missouri Engineering Library
Rolla	University of Missouri at Rolla Library
St. Louis	Washington University Library—Acquisitions Dept.

MONTANA

Bozeman	Montana State University Serial Librarian Mech. Engrg. Dept. Library

NEBRASKA

Lincoln — University of Nebraska-Lincoln
Library—Acquisitions Dept.

NEVADA

Reno — University of Nevada
Engineering Library
Mechanical Engineering Library

NEW HAMPSHIRE

Durham — University of New Hampshire
Library
Hanover — Dartmouth College
Baker Memorial Library

NEW JERSEY

Hoboken — Stevens Institute of Technology
Library
Newark — New Jersey Institute of Technology
Library
New Brunswick — Rutgers University
State University Library—Science and Medicine
Piscataway — Rutgers, The State University
Mechanical, Aero & Ind. Dept.
Princeton — Princeton University
Student Reading Room
Engineering Library
Teaneck — Fairleigh Dickinson University
Library

NEW MEXICO

Albuquerque — University of New Mexico
General Library—Serials Dept.
Mech. Engrg. Dept. Library
Las Cruces — New Mexico State University
Library
University Park — New Mexico State University
Library

NEW YORK

Albany — New York State Library
Binghamton — State University of New York
Library-Ser-Section
Bronx — State University of New York Maritime College
Stephen B. Luce Library
Manhattan College
Mechanical Engineering Dept. Library
Brooklyn — Polytechnic Institute of New York
Library
Pratt Institute
Library
Brooklyn Public Library
Buffalo — State University of New York at Buffalo
Science and Engineering Library
Farmingdale — Polytechnic Institute of New York
Hempstead — Hofstra University
Library
Dept. of Engrg.
Ithaca — Cornell University
Engineering Library-Carpenter Hall
Jamaica, L. I. — Queens Borough Public Library
New York — City College of New York
Engineering Library—Steinman Hall
Mechanical Engrg. Dept. Library
Columbia University
Egleston Library
Cooper Union
Main Library
Bateman Library—Mech. Engrg. Dept.
Engineering Societies Library
New York Institute of Technology College Library
Public Library—Science and Technology Div.
Old Westbury — New York Institute of Technology
Library
Potsdam — Clarkson College of Technology
Mechanical Engineering Dept. Library
Rochester — University of Rochester
College of Engineering Library
Rochester Institute of Technology
Wallace Memorial Library
Schenectady — Union College
Library
Stony Brook — State University of New York, Stony Brook
Engineering Library
Main Library—Periodicals
Syracuse — Syracuse University
Carnegie Library
Troy — Rensselaer Polytechnic Institute
Library Serials Dept.

NORTH CAROLINA

Charlotte — University of North Carolina-Charlotte
Atkins Library—Serials Department
Technical Literary Reference Room Library
Public Library
Durham — Duke University
Library—Periodicals
Greensboro — North Carolina Agricultural & Tech. State Univ.
Main Library
Mechanical Engineering Dept. Library
Raleigh — North Carolina State University at Raleigh
Attn: I. T. Litteton
D. H. Hill Library

NORTH DAKOTA

Fargo — North Dakota State University
Library
Grand Forks — University of North Dakota
Main Library
Mechanical Engineering Dept. Library

OHIO

Ada — Ohio Northern Library
Heterick Library
Mechanical Engineering Reading Room
Akron — University of Akron
Mechanical Engineering Dept. Library
Auburn Science Library
Athens — Ohio University
Mechanical Engrg. Library
Cincinnati — University of Cincinnati
Library
Cleveland — Case Western Reserve University
The Sears Library
Cleveland State University
Library
Mechanical Engineering Dept. Library
Order Unit—Serials
Columbus — Ohio State University
Library
Dayton — University of Dayton
Library—Periodicals Dept.
Toledo — University of Toledo
Carlson Library
Youngstown — Youngstown State University
Library Serials Dept.

OKLAHOMA

Norman — University of Oklahoma
Engineering Library
Stillwater — Oklahoma State University
Library
Tulsa — University of Tulsa
McFarlin Library—Serials

OREGON

Corvallis — Oregon State University
Library—Serials Dept.
Klamath Falls — Oregon Institute of Technology
Main Library
Portland — University of Portland
Main Library

PENNSYLVANIA

Bethlehem — Lehigh University
University Library
Mechanical Engineering Dept. Library
Chestnut Hill — Spring Garden College
Main Library
Chester — Widener College
School of Engineering Library
Easton — Lafayette College
Skillman Memorial Library
Erie — Gannon College
Library
Johnstown — University of Pittsburgh at Johnstown
Main Library

Lewisburg	Bucknell University Bertrand Library—Periodicals Dept. Mechanical Engineering Dept. Library
Middletown	Pennsylvania State University-Capitol Campus Library
Philadelphia	Drexel University Attn. Serials Dept. Temple University Paley Library University of Pennsylvania Towne Scientific Library
Pittsburgh	Carnegie-Mellon University Engineering & Science Library Mechanical Engineering Library University of Pittsburgh Bevier Engrg. Library Carnegie Library of Pittsburgh
Swarthmore	Swarthmore College College Library
University Park	Pennsylvania State University Pattee Library—Serials Mechanical Engineering Dept. Library
Villanova	Villanova University Main Library Mechanical Engineering Dept. Library

PUERTO RICO

Mayaguez	University of Puerto Rico General Library Mechanical Engineering Library

RHODE ISLAND

Kingston	University of Rhode Island Library
Providence	Brown University Sciences Library

SOUTH CAROLINA

Clemson	Clemson University College Library Mech. Engrg. Library
Columbia	University of South Carolina McKissick Library—Serials Mechanical Engrg. Dept. Library

SOUTH DAKOTA

Brookings	South Dakota State University Library
Rapid City	South Dakota School of Mines and Technology J. Taylor Library Mech. Engrg. Dept. Library

TENNESSEE

Cookeville	Tennessee Tech University Mechanical Engrg. Dept. Library J. Whitson Memorial Library
Knoxville	University of Tennessee Engineering Library
Memphis	Christian Brothers College Library—Periodicals Dept. Memphis State University John Brister Library—Serials Department
Nashville	Tennessee State University Mechanical Engrg. Dept. Vanderbilt University Joint University Libraries

TEXAS

Arlington	University of Texas at Arlington Library—Serials Mech. Engrg. Dept. Library
Austin	University of Texas at Austin Engineering Library
Beaumont	Lamar University Library Engineering Library
College Station	Texas A & M University Library—Serials Record
Dallas	Southern Methodist University Engineering School Library
El Paso	University of Texas at El Paso Main Library—Serials Dept.
Houston	University of Houston Libraries—Serials Mech. Engrg. Dept. Library William Marsh Rice University Fondren Library
Kingsville	Texas A & I University Technical Library—School of Engineering James C. Jernigan Library
Lubbock	Texas Tech University Mechanical Engineering Dept. Library
Prairie View	Prairie View Agricultural & Mechanical Univ. W. R. Banks Library Engineering Library

UTAH

Logan	Utah State University Dept. of Mechanical Engineering—Library Main Library
Provo	Brigham Young University Central Library—Serials Section Mechanical Engineering Dept. Library
Salt Lake City	University of Utah Engineering Library—Serials Order Dept. Mechanical Engineering Dept. Library

VERMONT

Burlington	University of Vermont Billings Library
Northfield	Norwich University Mechanical Engineering Dept. Library

VIRGINIA

Blacksburg	Virginia Polytechnic Institute & State Univ. Carol M. Newman Library
Norfolk	Old Dominion College Library

WASHINGTON

College Place	Walla Walla College Library
Pullman	Washington State University Science Library—Holland Library
Seattle	Seattle University Library University of Washington Engineering Library FH-15 Mechanical Engineering Library FU-10

WEST VIRGINIA

Montgomery	West Virginia Institute of Technology Vining Library Mechanical Engrg. Library
Morgantown	West Virginia University Engineering Library—Evansdale Campus

WISCONSIN

Madison	University of Wisconsin College of Engrg. Library
Milwaukee	Marquette University Mechanical Engineering Library Memorial Library Milwaukee School of Engineering Main Library University of Wisconsin, Milwaukee Main Library

WYOMING

Laramie	University of Wyoming Coe Library

In Other Countries

ARGENTINA

Buenos Aires	Sociedad Cientifica

AUSTRALIA

Adelaide	Public Library of South Australia
Melbourne	State Library of Victoria
Nedlands	University of Western Australia
Sydney	Public Library of New South Wales

CANADA

British Columbia	
Vancouver	University of British Columbia Main Library—Serials Div.
Ontario	
Hamilton	McMaster University Physical Science Library
Kingston	Queen's University Mechanical Engineering Dept. Library
Toronto	University of Toronto Library—Serials Dept. Engineering Library
Waterloo	University of Waterloo Mechanical Engineering Dept. Library Library—Serials Dept.
Windsor	University of Windsor Mechanical Engrg. Dept. Library

ENGLAND

Birmingham	Birmingham Reference Library
Bristol	University of Bristol Library
Cambridge	University of Cambridge
London	Royal Aeronautical Society
Manchester	Manchester College of Science and Technology
Newcastle Upon Tyne	North East Coast Institute of Engineers and Shipbuilders

GERMANY

Berlin-Charlottenburg	Technische Universität Berlin
Karlsruhe	Universitats Bibliothek

HOLLAND

Delft	Bibliothek Technische Hogeschool

NORTHERN IRELAND

Belfast	Queen's University Library David Keir Branch

MEXICO

Mexico City	Ciudad Universitaria Facultad de Ingenieria Ist Politecnico Nacional Unidad Profesional
Monterrey	Instituto Technologico de Monterrey Biblioteca Depto. de Matematicas

NEW ZEALAND

Christchurch	University of Canterbury Librarian

SCOTLAND

Glasgow	Mitchell Library
Liverpool	City of Liverpool Libraries

SOUTH AFRICA

Cape Town	University of Cape Town Jagger Library

TURKEY

Istanbul	Bogazici Universitesi

Index to ASME Publications Issued in 1981

Books and Reports

Advances in Heat Transfer—1981, HTD-Vol. 18
ASME Guide for Metrication of Codes and Standards, SI (Metric) Units, SI-8
Bioengineering Symposium—1981, AMD-Vol. 43
Cavitation and Polyphase Flow Forum—1981
Cavitation Erosion in Fluid Systems
Computational Methods for Infinite Domain Media-Structure Interaction, AMD-Vol. 46
Computer Aided Design of Pipe and Pipe Supports, PVP-Vol. 54
Computer Analysis of Large-Scale Structures, AMD-Vol. 49
Computers in Flow Predictions and Fluid Dynamics Experiments
Critical Issues In Materials and Mechanical Engineering, PVP-Vol. 47
Current Topics in Piping and Pipe Support Design, PVP-Vol. 53
Design Inspection and Operation of High Pressure Vessels and Piping, PVP-Vol. 48
Failure Prevention and Reliability—1981
Finite Element Applications in Acoustics
Flow-Induced Vibration Design Guidelines, PVP-Vol. 52
Fluid Mechanics of Combustion Systems
Fluid Structure Interaction in Turbomachinery
Fluid Transients and Structural Interactions in Piping Systems
Fluid Transmission Line Dynamics
Fouling In Heat Exchange Equipment, HTD-Vol. 17
Fuel Coolant Interaction, HTD-Vol. 19
Heat Transfer in Electronic Equipment, HTD-20
Interactive Fluid—Structural Dynamics Problems In Power Engineering, PVP-Vol. 46
Integrated Environmental Control for Coal-Fired Power Plants
Mechanical Properties of Bone, AMD-Vol. 45
Mechanics of Fatigue, AMD-Vol. 47
Metallic Bellows and Expansion Joints, PVP-Vol. 51
Natural Convection, HTD-Vol. 16
New Concepts in Finite Element Analysis, AMD-Vol. 44
Nonlinear Finite Element Analysis of Plates and Shells, AMD-Vol. 48
Nonlinear Systems Analysis: Vol. 2, Techniques and Applications
Prediction of Turbulent Reacting Flows in Practical Systems
Proceedings of the 16th Intersociety Energy Conversion Engineering Conference
Progress in Engineering Optimization—1981
Regenerative and Recuperative Heat Exchange, HTD-Vol. 21
Snubber Designing Applications and Minimization Methods, PVP-Vol. 55
Solar Engineering—1981
Stress Indices and Stress Intensification Factors of Pressure Vessel and Piping Components, PVP-Vol. 50
Structural Considerations and Findings From Testing of Nuclear Components, PVP-Vol. 49
Study on State-of-the-Art of Dioxin from Combustion Sources
Thermal Hydraulics in Nuclear Power Technology, HTD-Vol. 15
Vibration in Power Plant Piping and Equipment
Wear Control Handbook
Wear of Materials—1981

American National Standards

A17.1-1981 Safety Code for Elevators and Escalators
A112.21.1M-1980 Floor Drains
B1.3M-1981 Screw Thread Gaging Systems for Dimensional Acceptability
B4.4M-1981 Inspection of Workpieces
B5.10-1981 Machine Tapers—Self Holding and Steep Taper Series
B16.11-1980 Forged Steel Fittings, Socket-Welding and Threaded
B16.33-1981 Manually Operated Metallic Gas Valves for Use In Gas Piping Systems Up to 125 psig (Sizes 1/2 through 2)
B16.37-1980 Hydrostatic Testing of Control Valves
B18.2.3.8M-1981 Metric Hex Lag Screws
B18.5.2.1M-1980 Metric Round Head Short Square Neck Bolts
B18.6.4-1981 Thread Forming and Thread Cutting Tapping Screws and Metallic Drive Screws (Inch Series)
B18.22M-1981 Metric Plain Washers
B29.21M-1981 700 Class Welded Steel and Cast Chains, Attachments and Sprockets for Water and Sewage Treatment Plants
B29.22M-1980 Drop Forged Rivetless Chains, Sprocket Teeth Drive Chain/Drive Dogs
B30.1-1981 Jacks
B30.16-1981 Overhead Hoists
B30.17-1980 Overhead and Gantry Cranes (Top Running Bridge, Single Girder, Underhung)
B31.3-1980 Edition Chemical Plant and Petroleum Refinery Piping
B40.1-1980 Gauges—Pressure Indicating Dial Type—Elastic Element
B47.1-1981 Gage Blanks
B56.8-1981 Personnel and Burden Carriers
B94.7-1980 Hobs
B94.47M-1980 Carbide Chip Breakers Used with Indexable Inserts for Clamp Type Holders
MC85.1M-1981 Terminology for Automatic Control
MH1.5M-1980 Slip Sheets
N45.2.1-1980 Cleaning of Fluid Systems and Associated Components for Nuclear Power Plants
N45.2.8a-1981 Addenda to N45.2.8-1975, Supplementary Quality Assurance Requirements for Installation, Inspection and Testing of Mechanical Equipment Systems for the Construction of Nuclear Power Plants
N45.2.15-1981 Hoisting, Rigging, and Transporting of Items for Nuclear Power Plants
N509-1980 Nuclear Power Plant Air Cleaning Units and Components
OM1-1981 Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices
OM5-1981 Inservice Monitoring of Core Support Barrel Axial Preload in Pressurized Water Reactors
PVHO-1-1981 Safety Standard for Pressure Vessels for Human Occupancy
TDP-1-1980 Recommended Practices for the Prevention of Water Damage to Steam Turbines Used for Electric Power Generation—Part 1: Fossil Fueled Plants
Y14.1-1980 Drawing Sheet Size and Format
PTC 4.4-1981 Gas Turbine Heat Recovery Steam Generator
PTC 19.10-1981 Flue and Exhaust Gas Analysis—Instruments & Apparatus, Part 10
PTC 33a-1980 Appendix to PTC 33—1978, Large Incinerators
PTC 38-1980 Determining the Concentration of Particulate Matter in a Gas Stream

ASME MISCELLANEOUS PAPERS

The papers in this list were presented at ASME during 1980 but were not published in the *Transactions* of the ASME or in full in MECHANICAL ENGINEERING. They can be consulted in the Engineering Societies Library where photostatic copies may be obtained and quotations will be given upon request.

A

Abauf, N.
See **Greene, G. A.**
Abbin, J. P.
Binary Rankine-Cycle Engines for Solar-Thermal Power Systems. 80-WA/Sol-19.
Abdelhamid, N.
Analysis of Rotating Stall in Vaneless Diffusers of Centrifugal Compressors. 80-GT-184.
Abdel-Khalik, S. I., Moses, G. A. and Peterson, R. R.
Heat Transfer Phenomena in Gas Protected Particle Beam Fusion Reactor Cavities. 80-HT-64.
Abd El Latif, A. K.
See **Ziada, H. H.**
Abegg, F.
Burning Coal in Alaska—A Winter Experience. 80-IPC/Fu-2.
Abernathy, G. H.
See **Krivokapich, G. A.**
Aboim-Costa, C.
See **Derbalian, G.**
Abou-Ellail, M. M. M. and Morcos, S. M.
Buoyancy Effects in the Entrance Region of Horizontal Rectangular Channels. 80-HT-139.
Accorsi, J. V. and DeRossett, T. A.
Hydrodynamic Lubrication of Journal Bearings with a Polymer Melt. 80-DE-6.
Adamantiades, A.
See **Sehgal, B. R.**
Adams, G. R.
Improvement of Parameter Estimation Through Uncertainty Analysis. 80-GT-9.
Adams, M. L., Makay, E. and Dimmer, J. P.
Feed Pump Vibration Research—Interstate Fluid Annuli. 80-JPGC/Pwr-20.
Adkins, C. R. and Bongaards, D. J.
Straight Double Wall Tube Steam Generator with Third Fluid Leak Detection Capability for LMFBR Application. 80-C2/NE-27.
Affenzeller, J., Schreiber, E. and Janisch, H.
Some Investigations About the Cavitation on Cylinder Liners of Diesel Engines. 80-DGP-27.
Aggarwal, S. K. and Sirignano, W. A.
One-Dimensional Turbulent Flame Propagation in an Air-Fuel Droplet Mixture. 80-WA/HT-37.
Agrawal, A. K., Epel, L. G., Guppy, J. G., Khatib-Rahbar, M. and Madni, I. K.
An Analysis of the Steady-Power Natural Circulation Experiments in LMFBR Plants. 80-WA/HT-41.
Agrone, M.
See **Lazzeri, L.**
Ahlbeck, D. R.
An Investigation of Impact Loads Due to Wheel Flats and Rail Joints. 80-WA/RT-1.
Ahlbeck, D. R.
Predicting the Load Environment on Railroad Track. 80-RT-7.
Ahmadian, M., Turner, J. H. and Burmeister, L. C.
A Monte Carlo Procedure for Two-Dimensional Steady Conduction at Straight Convecting Boundaries. 80-WA/HT-42.
Ahner, D. J.
See **Shah, R. P.**
Ahrens, F. W. and Semerciyan, M.
A Finite Element Method for the Analysis of Heat Transfer in Composites of Highly-Conducting and Insulating Materials. 80-HT-106.
Aida, T.
See **Fujio, H.**
Ainoura, M. and Yonekura, M.
A Research for Developing a New Type Shaving Hob for Cutting Gears of Large Modules. 80-C2/DET-65.
Ainoura, M.
See **Hiroo, Y.**
Ainoura, M.
See **Nagano, K.**
Ainoura, M.
See **Sakuragi, I.**
Ainoura, M.
See **Yonekura, M.**
Akazawa, M., Tejima, T. and Narita, T.
Full Scale Test of High Speed, High Powered Gear Unit—Helical Gears of 25,000 PS at 200 m/s PLV. 80-C2/DET-4.
Akinaga, M.
See **Fukuda, K.**
Alderson, E. D.
See **Caruvana, A.**
Alger, T. W.
Thermal Characteristics of Discharge-Heated Copper Vapor Laser (DHCVL) Heat Shields Formed of Multiple Coaxial Cylinders. 80-HT-136.
Ali, M. W., Meyer, D. E. and Young, F. M.
Mechanically Bonded Radiators for Locomotive Reliability. 80-WA/RT-4.
Allam, T. A.
See **Farag, I. H.**
Allen, A. B.
See **Elmadany, M. M.**
Allen, R. E. and Sidenstick, J. E.
Turbine Blade Technology—Present & Future. 80-C2/Aero-10.
Allen, R. R. and Harrell, J. P.
Connection Force Analysis of Mechanisms Described by Explicit Equations of Motion in Generalized Coordinates. 80-DET-75.
Allen, R. R. and O'Massey, R. C.
Longitudinal Instability in Braked Landing Gear. 80-WA/DSC-12.
Allis, L.
See **Papez, J. S.**
Alloca, R. E.
Dormavac—Long Term Storage of Perishable Commodities. 80-ENAs-1.
Al-Sharif, M. M.
See **Thomas, L. C.**
Altin, M.
Analysis of Energy Conservation Gains Versus Production Curtailment Risks. 80-IPC/Pwr-4.
Alwang, W. G.
A Review of Current Methods and Problems in Making Gas Path Measurements in Aircraft Gas Turbine Engines. 80-GT-75.
A-Moneim, M. T.
Coupling of a Three-Dimensional Structural Pipe Element to Two-Dimensional Implicit Hydrodynamics. 80-C2/PVP-118.
Amos, J. C.
See **Whipple, J. C.**
Anderson, A. W.
See **Neaman, R. G.**
Anderson, C. A. and Montgomery, D. W.
CDS Heat Transport and Steam Generating Systems. 80-C2/NE-1.
Anderson, D. O.
See **Free, J. C.**
Andreopoulos, J.
Measurements in Pipe Flow Issuing Perpendicularly into a Cross Stream. 80-WA/HT-24.
Angello, L. C. and Coppola, E. N.
Experimental Evaluation of Catalytic Flame Stabilization for Aircraft Afterburners. 80-GT-56.
Anson, D.
Conceptual Design of a Coal Fired Utility Boiler for Cycling Duty. 80-JPGC/Pwr-16.
Anton, R.
See **Lucas, G. G.**
Antony-Spies, P.
See **Becker, M.**
Aoki, H.
See **Nakahara, T.**
Aono, H.
See **Jimboh, K.**
Ariman, T.
See **Aumen, C. P.**
Ariman, T.
See **Chen, C. C.**
Ariman, T.
See **Lee, L. H. N.**
Ariura, Y.
See **Ueno, T.**
Arndt, G. and Wright, P. K.
Flexible Manufacturing Systems, Metal Cutting and Material Conservation. 80-WA/Prod-6.
Arumí-Noé, F. and Wysocki, M.
DEROB: A System for Simulating the Dynamic Energy Performance of Passive Solar Structures. 80-HT-21.
Askar, A.
See **Chu, L. L.**
Atluri, S. N.
See **Nishioka, T.**
Aton, C. L., Birchfield, J. L. and Bulpitt, W. S.
Wood as an Alternate Fuel. 80-C2/Pwr-6.
Attia, A. Y. and Hamaki, A.
Accuracy of Motion Transmission of Gears of Circular-Arc Tooth-Profile. 80-C2/DET-126.
Atwater, M. A. and Ball, J. T.
The Effects of Clouds in Modeling Solar Radiation. 80-WA/Sol-23.
Audet, N. F.
See **Richardson, D. L.**
Auerbach, I.
See **Suchsland, K. E.**
Aulisio, C. J.
See **Modrak, T. M.**
Aumen, C. P., Ariman, T. and Muleski, G. E.
Survey of Existing Buried Gas Pipelines and Their Seismic Resistance. 80-C2/PVP-77.
Austin, C.
See **Hubbard, J. K.**
Austin, S. C.
See **Kassawara, R. P.**
Au-Yang, M. K. and Galford, J. E.
A Structural Priority Approach to Fluid-Structure Interaction Problems. 80-C2/PVP-115.
Avelar, E. M.
See **DiPippo, R.**
Awaji, H., Kobayashi, A. S., Emery, A. F., Love, W. J., Perl, M. and Kistler, B. L.
Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe. 80-WA/PVP-6.
Aylor, J. H.
See **Thacker, J. G.**
Ayoub, M. A.
The Manual Lifting Problem: The Illusive Solution. 80-C2/Saf-2.
Azad, F. H.
See **Modest, M. F.**
Azad, F. H. and Modest, M. F.
Evaluation of the Radiative Heat Flux in Absorbing, Emitting and Anisotropically Scattering Cylindrical Media. 80-HT-35.

Azarbaijani, S. and Karnopp, D.
Bond Graph Structural Models for Heat Exchangers. 80-WA/Sol-17.
Azuma, T., Tokunaga, Y. and Yura, T.
Characteristics of Exhaust Gas Pulsation of Constant Pressure Turbo-charged Diesel Engines. 80-DPG-5.

B

Babcock, C. D.
See **Shih, C.-F.**
Babcock, R. V.
See **Pechersky, M. J.**
Backhaus, E. F.
See **Jermanok, J.**
Bacilć, B. S.
Optimal Reformulation of Transient Heat Conduction Problems with Temperature Dependent Properties. 80-HT-120.
Badiani, M. and Midha, A.
Member Initial Curvature Effects on the Elastic Slider-Crank Mechanism Response. 80-DET-72.
Bagci, C.
Complete Shaking Force and Shaking Moment Balancing of Link Mechanisms Using Balancing Idler Loops. 80-DET-100.
Bagci, C. and Wong, J. C.
Finite Element Stress Analysis of Planar Elastic Systems Having Press Fitted Units. 80-DET-98.
Bagci, C.
Optimum Synthesis of Multi-Loop Planar Mechanisms Via the Linear Partition of Design Equations (Methods of No Misconceptions). 80-DET-1.
Bagci, C.
Planar Polar Stress Elements with Regular and Irregular Joint Freedoms for Mechanical Design. 80-DET-71.
Baheti, R. S. and Mohler, R. R.
Experimental Results in the Modeling and Control of a Small Furnace. 80-WA/DSC-31.
Bahgat, B. M.
See **Osman, M. O. M.**
Bahr, D. W.
See **Gleason, C. C.**
Bailey, E. I. and Zimmer, R. A.
An Efficient Analysis of Torsion on Non-circular Cross Sectional Shafts. 80-Pet-58.
Baines, T. M.
See **Ullman, T. L.**
Baker, J. E., Duclong, T. and Khoo, P. S H.
On Attempting to Reduce Undesirable Inertial Characteristics of the Schatz Mechanism. 80-DET-79.
Baker, J. E.
On Linkages and Mobile Polyhedra. 80-DET-30.
Baker, P. H. and Schulze, F. W.
Progress in Railway Mechanical Engineering 1979-1980 Report of Survey Committee Locomotives. 80-WA/RT-12.
Balas, M. J.
Nonlinear State Estimation and Feedback Control of Nonlinear and Bilinear Distributed Parameter Systems. 80-WA/DSC-28.
Baldur, R. and Sabourin, M.
Finite Element Analysis of Cylindrical Intersections Loaded by Moments. 80-C2/PVP-3.
Baldur, R.
Mini-Computer for Complex Pressure Vessel Analysis. 80-C2/PVP-132.
Balendra, T. and Nash, W. A.
Seismic Analysis of a Cylindrical Liquid Storage Tank with a Dome by the Finite Element Method. 80-C2/PVP-74.
Ball, J. M., Marsden, J. E. and Slemrod, M.
Controllability and Stabilizability of Distributed Bilinear Systems: Recent Results and Open Problems. 80-WA/DSC-27.
Ball, J. T.
See **Atwater, M. A.**
Ballou, E. V.
See **Wood, P. C.**
Baltes, B.
See **Wahi, K. K.**
Bammert, K. and Krapp, R.
Frequency Control with Closed-Cycle Gas Turbines in an Interconnected Electrical Grid. 80-WA/GT-5.
Bammert, K., Rautenberg, M. and Knapp, P.
The Influence on the Meriodional Impeller Shape on the Energy-Transfer in Centrifugal Compressors. 80-GT-48.
Ban, T. E., Johnson, S. K. and Rodgers, L. W.
Low-Btu Gas From an Environmentally Clean Pellet Fuel. 80-WA/Fu-2.
Bansal, R. K., Kadaba, P. V. and Desai, P. V.
Heat Transfer from Horizontal Tubes in Gas Fluidized Beds. 80-HT-115.
Baqué, P., Cambillard, E., Saur, J. M. and Zuber, T.
The Creys Malville FBR Superphenix Steam Generators. 80-C2/NE-28.
Barash, M. M.
See **Gupta, S. M.**
Barber, R. E.
Solar and Geothermal Rankine Cycle Engines Can Convert Petroleum Industry Waste Heat into Electrical Power. 80-Pet-27.
Barber, R. E.
See **Batton, W. D.**
Bardon, M. F.
Comparison of the Cold Temperature Performance of Gasoline and Alcohols in Spark Ignition Engines. 80-Pet-17.
Barker, J. M. and Kettleborough, C. F.
The Adiabatic Adsorption-Desorption Characteristics of Silica Gel Beds—Part 1: Theory. 80-WA/Sol-30.
Barker, J. M. and Kettleborough, C. F.
The Adiabatic Adsorption-Desorption Characteristics of Silica Gel Beds—Part 2: Curve Fits. 80-WA/Sol-31.
Barlow, R. E., Der Kiureghian, A. and Satyanarayana, A.
New Methodologies for Analyzing Pipeline and Other Lifeline Networks Relative to Seismic Risk. 80-C2/PVP-65.
Barlow, R. J.
See **Greening, J. H.**
Baron, S.
The Economic Vs. Energetics Techniques of Forecasting the True Costs of Solar Energy. 80-C2/Sol-24.
Barona, N.
See **Spivey, J. J.**
Barrett, R. E. and Saxton, M. J.
Predicted Burning Times of Nonporous Coal Particles as a Function of Pressure and Particle Size. 80-WA/Fu-5.
Barriga, A. and Essenhigh, R. H.
A Mathematical Model of a Combustion Pot: Comparison of Theory and Experiment. 80-WA/HT-32.
Barsin, J. A.
Experience with High Sodium Subbituminous Coals. 80-WA/Fu-4.
Bartley, G. W.
See **Ghonem, H.**
Bartz, J. A.
See **Fricke, H. D.**
Bates, T. R.
See **Kutasov, I. M.**
Batton, W. D. and Barber, R. E.
A Simple Process Heat Collector System. 80-C2/Sol-16.
Bauer, F. W. and Melick, G. F.
The Reference Plant Concept for Cogeneration. 80-IPC/Pwr-3.
Baum, A. J. and Curlee, N. J.
An Experimental and Analytical Investigation of Dryout and Chemical Concentration in Confined Geometries. 80-C2/NE-6.
Baum, M. R., Darlaston, B. J. L., Love, J., Emery, A. F. and Kobayashi, A. S.
Depressurization Characteristics of a Rupturing Pipe. 80-C2/PVP-120.
Baum, M. R. and Elston, M. J. H.
Pneumatic Rupture of a Brittle Pipe: The Depressurization Transient Adjacent to the Ruptured Zone. 80-C2/PVP-100.
Bauman, F., Gadgil, A., Kammerud, R. and Greif, R.
Buoyancy-Driven Convection in Rectangular Enclosures: Experimental Results and Numerical Calculations. 80-HT-66.
Bauserman, G. W., Spengler, C. J. and Cohn, A.
Combustion Effects of Coal Liquid and Other Synthetic Fuels in Gas Turbine Combustors—Part II: Full Scale Combustion and Corrosion Tests. 80-GT-68.
Bauserman, G. W.
See **Singh, P. P.**
Bazarian, E. R.
See **Singh, P. P.**
Beach, G. R.
Development, Testing and Field Use of a Specialty Electro-Mechanical, Contra-Helical Steel Strength Member Cable. 80-WA/OCE-7.
Beachley, N. H. and Frank, A. A.
Principles and Definitions for Continuously Variable Transmissions, with Emphasis on Automotive Applications. 80-C2/DET-95.
Beacon, R. G. and Bissell, T. J.
Three Methods of Empty/Load Braking for Freight Cars. 80-WA/RT-7.
Beard, J. T.
See **Hall, R. E.**
Beard, R. M.
Experience with an Electro-Hydraulic Subsea Wellhead Control System. 80-Pet-60.
Beatty, K. O. and Richardson, F. M.
Transfer Thermography: A Technique in Infrared Thermal Imaging. 80-HT-6.
Beck, J. V., Litkouhi, B. and St. Clair, C. R.
Efficient Numerical Solution of the Nonlinear Inverse Heat Conduction Problem. 80-HT-3.
Becker, M. and Antony-Spies, P.
Oscillation Phenomena in Pressure Suppression Systems with Flexible and Rigid Walls. 80-C2/PVP-112.
Beckman, W. A.
See **Svard, C. D.**
Beckmann, K.
Environmental Control of a Pressurized Equipment Container for Shuttle Flights—The Spacelab Igloo. 80-ENAs-19.
Beese, J. G.
The Manufacture of Composite-holed, Safety-Rupture Diaphragms. 80-Pet-7.
Beeson, D. E.
See **Jaliwala, S. A.**
Beggs, H. D., Brill, J. P., Kanu, E. P. and Paz-y-Mino, C. A.
Design Criteria for Selecting Velocity Type Subsurface Safety Valves. 80-Pet-52.
Beley, J. R.
See **Miller, D. J.**
Belie, R. G., Gomez, A. V., Hunul, S., Rapagnani, N. L., Stafford, E. and Thomson, M.
Thermal Analysis of High Energy Chemical Laser Nozzles. 80-HT-133.
Bell, M. J.
See **Sherburne, P. A.**
Bell, R. A.
See **Duncan, J. M.**
Bellmore, C. P. and Reid, R. L.
Numerical Prediction of Wall Temperatures for Near-Critical Para-Hydrogen in Turbulent Upflow Inside Vertical Tubes. 80-WA/HT-52.
Belytschko, T. and Mullen, R.
Two Dimensional Fluid-Structure Impact Computations. 80-C2/PVP-139.
Benjamin, J. A.
Quality Assurance for Nuclear Construction. 80-C2/PVP-13.
Benson, R. C.
See **Maloney, K. L.**
Bentley, D.
See **Haves, P.**

Beohar, S. B. L. and Rao, A. C.
Optimum Stochastic Synthesis of Four Bar Spatial Function Generators. 80-DET-32.
Beran, M. A. and Tesar, D.
3 MSP Synthesis of the RCCC Linkage: A Generalized Dual Number Approach. 80-DET-99.
Bergles, A. E.
See **Jensen, M. K.**
Berkof, R. S.
Mechanism Case Studies V. 80-DET-13.
Berry, W. E., Dant, C. C., MacLeod, G. and Williams, B. A.
NASA-AMES Life Sciences Flight Experiments Program—1980 Status Report. 80-ENAs-34.
Berry, W. E.
See **Krause, H. H.**
Bertrand, M.
See **Brezina, M.**
Berzak, N.
Optimization of Cam-Follower Systems with Kinematic and Dynamic Constraints. 80-DET-11.
Bhangu, J. K.
See **Wassell, A. B.**
Bhat, R. B., Xistris, G. D. and Sankar, T. S.
Dynamic Behavior of a Moving Belt Supported on Elastic Foundation. 80-DET-55.
Bigg, D. M.
See **Bradbury, E. J.**
Bilgen, E.
A Feasibility Study on Solar Utility Total Energy System (SUTES) 80-WA/Sol-22.
Billimoria, H. D. and Tam, K. K.
Experimental Investigation of Stiffness Coefficients and Allowable Loads for a Nozzle in a Flat Bottom Storage Tank. 80-C2/PVP-59.
Billman, L. S. and Walker, B. H.
Status of Forged Turbine Rotor Technology. 80-GT-100.
Binder, S. and Mack, J. C.
Experience with Advanced High Performance Gear Steel. 80-C2/DET-77.
Bingham, C. E.
See **Ortega, J. K. E.**
Bingham, W. G.
Utilization of Design Change Control to Reduce Cost and Schedule Impacts on Power Projects. 80-JPGC/Pwr-6.
Bingle, J. D.
See **Cheung, F. B.**
Birchfield, J. L.
See **Aton, C. L.**
Bishop, K. A.
See **Hotchkiss, G. B.**
Bissell, T. J.
See **Beacon, R. G.**
Bittel, L. R.
The Theory and Practice of Management: Part Art, Part Science. 80-WA/Mgt-1.
Bittker, D. A.
An Analytical Study of Nitrogen Oxides and Carbon Monoxide Emissions in Hydrocarbon Combustion with Added Nitrogen—Preliminary Results. 80-GT-60.
Biwa, T.
See **Saeki, K.**
Blanscet, D. I.
See **Lewellen, M. W.**
Blanton, J. C. and Durgin, G. A.
The Effect of Heavy Liquid Fuels Ash Deposition on Heat Transfer in a Water-Cooled Gas Turbine Nozzle Sector. 80-HT-15.
Bloch, H. P.
Large Scale Application of Pure Oil Mist Lubrication in Petrochemical Plants. 80-C2/Lub-25.
Bloch, P.
Anlaysis of Gear Cutting. 80-C2/DET-76.
Bloom, J. M.
An Analytical Assessment of the Effect of Residual Stresses and Fracture Properties on Service Performance of Various Weld Repair Processes. 80-C2/PVP-140.
Blumberg, B.
Nuclear Power and Energy Uses. 80-WA/NE-5.
Boden, J. C.
See **Jenkins, B. G.**
Boenig, F. H.
See **Grant, J. R.**
Bonakdar, H. and McAssey, E. V.
A Method for Determining Rewetting Velocity Under Generalized Boiling Conditions. 80-WA/HT-40.
Bonano, E. J. and Davis, E. J.
Numerical Simulation of Longitudinal Roll Vortices in a Heated Flowing Liquid Film. 80-HT-70.
Bond, J. A.
See **Pomeroy, B. D.**
Bondi, K. R.
See **Shea, M. L.**
Bongaards, D. J.
See **Adkins, C. R.**
Bonnett, C.
See **De Sivry, B.**
Book, W. J. and Majette, M.
A Comparison of Natural Frequency Prediction Methods for Flexible Manipulator Arms. 80-WA/DSC-19.
Borie, E. T. L. and Haney, B. J.
Environmental Considerations in Pipeline and Terminal Design. 80-Pet-12.
Bornstein, B. and Cotton, K. C.
A Simplified ASME Acceptance Test Procedure for Steam Turbines. 80-JPGC/Pwr-15.
Boseman, J. J.
See **Frazier, L. E.**
Bouchez, J. P. and Stroom, C.
Simulation of the Transport Time Delay in Fluid Loops by Means of a Corrective Heat Flux. 80-ENAs-22.
Bouecke, R.
Analytical and Experimental Investigations of the Flow Distribution Inside a U-Tube Steam Generator. 80-C2/NE-9.
Bouzakis, K.
See **Konig, W.**
Bowen, J.
See **Erdman, A.**
Bowman, D. G.
See **Hanson, L. D.**
Boyd, D. M.
Holographic and Acoustic Emission Evaluation of Pressure Vessels. 80-C2/PVP-25.
Boyd, R. D.
See **Suchsland, K. E.**
Boyer, R. C. and Fender, D. A.
Condenser Provisions for On-line Detection of Tube Sheet Inleakage. 80-JPGC/Pwr-23.
Boynton, C. K.
See **Burr, T. E.**
Bozatli, A. N.
See **Lea, J. F.**
Braaten, R. J.
A Generalized Torsion Spring Design Method—a Further Refinement. 80-DET-5.
Bradbury, E. J. and Bigg, D. M.
Conductive Plastics Methods. 80-DE-4.
Bradley, R. P.
See **Roquemore, W. M.**
Braun, C.
See **Sehgal, B. R.**
Bravenec, E. V.
See **Price, H. J.**
Brenne, C. E., Meissner, C., Lo, E. Y. and Hoffman, G. S.
Scale Effects in the Dynamic Transfer Functions for Cavitating Inducers. 80-WA/HT-51.
Bretl, J. L. and Cook, R. D.
Finite Element Analysis of Threaded Connections. 80-DE-1.
Brewer, J. W.
The Bilinear, Modal State Equations for Age-Dependent Growth Control. 80-WA/DSC-3.
Brewer, J. W.
Bond Graphs of Age-Dependent Renewal. 80-WA/DSC-4.
Brezina, M., Bertrand, M. and Wieser, P.
Dimensional Stability and Fatigue Resistance of Acetal Homopolymer Gears Forged in the Solid State. 80-C2/DET-106.
Brierley, W. H.
See **Bijay, M. M.**
Brill, J. P.
See **Beggs, H. D.**
Brink, D. F. and Yasuda, A. K.
Performance Predictions for a Total Energy Photovoltaic Concentrator System. 80-C2/Sol-7.
Brisbane, T. W. C., Grant, I. D. R. and Whalley, P. B.
A Prediction Method for Kettle Reboiler Performance. 80-HT-42.
Briscoe, B. J. and Stolarski, T. A.
The Influence of Linear and Rotating Motions on the Friction of Polymers. 80-C2/Lub-44.
Broadwater, R. P.
See **Joyner, L. L.**
Brouillet, A. O.
See **Burr, T. E.**
Brown, A., Mandjikas, B. and Mudyiwa, J. M.
Blade Trailing Edge Heat Transfer. 80-GT-45.
Brown, R. J. and Rogers, D. C.
Development of Pump Characteristics from Field Tests. 80-DE-7.
Brown, S. J. and Lieb, B. W.
A Comparison of Experimental and Theoretical Vibration Results for Narrow Gap, Fluid-Coupled, Coaxial Flexible Cylinders. 80-C2/PVP-104.
Brown, S. J.
Theoretical-Experimental Seismic Tests of Fluid Coupled Co-Axial Cylinders. 80-C2/PVP-45.
Brown, S. J.
See **Scavuzzo, R. J.**
Bruno, A.
See **Hilbert, W. F.**
Buchberg, H.
See **McMurrin, J. C.**
Buck, C. L., Goodling, J. S. and Vachon, R. I.
Economic Analysis and Optimization of Solar Residential Space Heating. 80-WA/Sol-11.
Buck, S. L.
See **Stewart, W. E.**
Buckens, F.
On Damped Coupled Torsional and Flexural Vibrations of Gear-Connected Parallel Shafts. 80-C2/DET-6.
Budininkas, P., Quattrone, P. D. and Leban, M. I.
Water Recovery by Catalytic Treatment of Urine Vapor. 80-ENAs-16.
Buderer, M. C. and Salinas, G. A.
Life Sciences Experiments on Spacelab 1. 80-ENAs-36.
Bulpitt, W. S.
See **Aton, C. L.**
Bultzo, C.
Some Unique Gas Turbine Problems. 80-GT-179.
Burdess, J. S.
See **Fawcett, J. N.**
Burgess, G.
See **Zorzi, E. S.**
Burmeister, L. C.
See **Ahmadian, M.**
Burmeister, L. C.
See **Hotchkiss, G. B.**
Burns, D. J.
See **Pick, R. J.**
Burns, K. H. and Kearsey, R. P.
Protection and Specification of Clutches to be Used with Gas Turbine Generators. 80-GT-33.
Burns, P. J.
See **van der Mersch, P. L.**
Burr, T. E., Boynton, C. K. and Brouillet, A. O.
Maintainable Maintenance Disconnect Valve (MMDV) for on-Orbit Component Replacement. 80-ENAs-42.
Burrows, C. R.
An Appraisal of Schroeder-Phased Harmonic Signals for Bearing Identification. 80-WA/DSC-34.

Burton, T. D.
Parametric Excitation of Rail Vehicle Wheelsets Due to Track Irregularity. 80-WA/DSC-20.
Bushnell, D. J.
See **Gregoric, M.**
Buyakov, I. F.
See **Cess, R. D.**
Buzek, J. R. and Epstein, H. I.
Hoop Stresses for Cylindrical Liquid Storage Tanks Designed with AWWA and API Codes. 80-C2/PVP-60.
Byford, A. N.
The Dark Face of Energy. 80-Pet-93.
Byford, A. N.
Down to the Abyssal Plane. 80-Pet-92.

C

Cady, E. C.
See **Robertson, A. S.**
Cakmak, A. S.
See **Chu, L. L.**
Caldwell, J.
See **Cess, R. D.**
Callinan, J. P.
An Analysis of the Thermal Fixation of Pilings. 80-WA/HT-6.
Callinan, J. P.
An Application of Finite Difference Techniques to the Thermal Analysis of the Cooling of a Slag Casting. 80-HT-33.
Calvo, R. and Thompson, R. E.
Compact Closed Cycle Brayton System for Marine Propulsion. 80-WA/GT-4.
Cambillard, E.
See **Baqué, P.**
Campbell, J., Lee, J. C. and Wright, D. E.
Coal-Fired, Closed-Cycle, Gas Turbine Cogeneration Systems. 80-GT-156.
Campbell, J.
See **Carpenter, H. W.**
Campbell, N. T., Groth, R. H. and Zaccardi, V. A.
Gas Turbine Engine Emissions Measurement Technology—An Overview. 80-GT-86.
Campbell, R. B.
See **Vandiver, J. K.**
Caplan, C. R.
See **Scarton, H. A.**
Carew, V. E.
Economic Considerations for Automating Unit Handling and Storage. 80-WA/MH-6.
Carhart, H. W. and Johnson, J. E.
A History of the Naval Research Laboratory Contributions to Submarine Life Support Systems. 80-ENAs-29.
Carlson, A. B., Harrje, D. T. and Settles, G. S.
An Optical Study of Thermal Convection in a Passive Solar Heated Room. 80-C2/Sol-1.
Carnavos, T. C.
An Experimental Study: Condensing R-11 on Augmented Tubes. 80-HT-54.
Carpenter, H. W., Campbell, J., Russell, L. H. and Wright, D. E.
High-Temperature, Coal-Fired Combustor with Ceramic Heat Exchangers for CCGT Systems. 80-GT-155.
Carson, W. H. and Harris, H. H.
Steam 80™ Steam Generator Instrumentation. 80-C2/NE-12.
Carson, W. L. and Oladiran, O. B.
An Interactive Computer Program for Force System Structural and Dimensional Synthesis. 80-DET-61.
Carter, C.
Heat Conduction Through the Trombe Wall. 80-HT-22.
Caruvana, A., Rose, R. S., Alderson, E. D. and Cincotta, G. A.
Design and Test of a 73-MW Water Cooled Gas Turbine. 80-GT-112.
Caruvana, A.
See **Horner, M. W.**
Case, J. B., Nelson, J. W. and Shaw, D. E.
Thermal Expansion Effects in Oil Storage Caverns. 80-Pet-87.
Cason, C.
See **Shih, C. C.**
Cason, R. M. and Koslin, M. E.
Monitor for Atmospheric Composition and Contaminants in Closed Environments. 80-ENAs-35.
Cassel, D. E.
See **Overton, R. L.**
Cassulo, J. C.
See **Gabor, J. D.**
Castelli, F. P.
See **Martin, J. R.**
Castelli, P. and Morello, L.
The Optimization of Engine Transmission Matching Reduces Car Fuel Consumption. 80-GT-130.
Catania, A. E.
Air Flow Investigation in the Open Combustion Chamber of a High-Speed, Four-Stroke Diesel Engine. 80-FE-5.
Catton, I.
See **McDonough, J.**
Cekirge, H. M. and Lehr, W. J.
Fate and Threat of Oil Slicks in the Arabian Gulf. 80-ENAs-10.
Cess, R. D., Hameed, S. and Hogan, J. S.
Response of the Global Climate to Changes in Atmospheric Chemical Composition Due to Fossil Fuel Burning. 80-WA/HT-3.
Cess, R. D., Caldwell, J., Slobodkin, L. S., Buyakov, I. F. and Triput, N. S.
Spectroscopic Identification of Planetary Cloud and Haze Compositions. 80-HT-29.
Cess, R. D.
See **Hameed, S.**
Chaiyung, L.
A Semi-Analytical Method for Aseismic Design of Cylindrical Vessels. 80-C2/PVP-86.
Chaiyung, L. and Weiming, T.
On Seismic Resistant Design of Steel Diagonal Bracings. 80-C2/PVP-83.
Chalmers, H. and Sanders, R.
The Motion Compensation Deck Handling System for the Remote Unmanned Work System. 80-WA/OCE-11.
Chambers, A. J.
See **Howe, B. M.**
Chan, A. W., Chen, C. H. and Mitchel, B. J.
Modal Dynamic Analysis of Linear Elastic Systems with Specified Displacement Time Histories. 80-C2/PVP-91.
Chan, A. W.
See **Chen, C. H.**
Chan, S. H. and Cho, D. H.
Radiative Transfer with Phase Change—A New Formulation and Solutions. 80-HT-30.
Chan, T., Openshaw, F. and Pfremmer, D.
HTGR-GT and Electrical Load Integrated Control. 80-WA/DSC-25.
Chan, T. W.
See **Openshaw, F. L.**
Chandra, K., McLandrich, G. T. and Sorensen, J.
Design of Low Btu Coal Gasification Facilities for Industry. 80-IPC/Fu-1.
Chang, D. J., Lefter, J., Henninger, W. and Munson, D.
Evaluation of U Bar Type Whip Restraints for Out-of-Plane Loading. 80-C2/PVP-55.
Chang, Y. W. and Gvildys, J.
Comparison of Lagrangian, Eulerian and Arbitrary Lagrangian-Eulerian Methods for HCDA Analysis Involving Fluid-Structure Interaction. 80-C2/PVP-96.
Chapman, J. N., Strom, S. S. and Wu, Y. C. L.
MHD/Steam Electrical Power Production — Promise, Progress and Problems. 80-C2/Pwr-4.
Chargin, M.
See **MacNeal, R. H.**
Chase, K. W.
Computer-Aided Design of Precision Control Linkages in the Classroom. 80-WA/DSC-39.
Chase, K. W.
See **Russon, V. K.**
Chaturvedi, K., Chiang, Y. F. and Roberts, A. S.
Analysis of Two-Phase Flow Solar Collectors with Application to Heat Pumps. 80-WA/Sol-32.
Chen, C. C., Ariman, T. and Lee, L. H. N.
Elastic Buckling Analysis of Buried Pipelines under Seismic Loads. 80-C2/PVP-76.
Chen, C. H., Chan, A. W. and Lee, R. W.
Equivalent Static Coefficients for Seismic and Other Dynamic Load Qualification of Nuclear Components. 80-C2/PVP-90.
Chen, C. C.
See **Lee, L. H. N.**
Chen, C. H.
See **Chan, A. W.**
Chen, C. -J. and Li, P.
The Finite Analytic Method for Steady and Unsteady Heat Transfer Problems. 80-HT-86.
Chen, C. J. and Chiou, J. S.
Laminar and Turbulent Heat Transfer in the Pipe Entrance Region for Liquid Metals. 80-HT-116.
Chen, F. Y.
Numerical Scheme for Determining the Pressure Angle and Radius of Curvature of Cams. 80-DET-70.
Chen, H. M. and Malanoski, S. B.
Fan/Foundation Interaction — A Simplified Calculation Procedure. 80-JPGC/Pwr-10.
Chen, J. C.
See **Nijhawan, S. M.**
Chen, J. L. S.
Natural Convection from Needles with Variable Wall Temperature. 80-HT-72.
Chen, K.
See **Chen, M. M.**
Chen, M. M., Chen, K. and Sohn, C. W.
Thermal Instability of Stagnation Point Boundary Layers. 80-HT-76.
Chen, M. M.
See **Sohn, C. W.**
Chen, S. S. and Jendrzejczyk, J. A.
Flow-Velocity-Dependence of Damping in Tube Arrays Subjected to Liquid Cross Flow. 80-C2/PVP-129.
Chen, T. S.
See **Moutsoglou, A.**
Chen, Y. N.
Jet Swing as Governing Factor for Fluid-Elastic Instability of Tube Bundles. 80-C2/PVP-103.
Cheng, H. M.
See **Dhir, V. K.**
Cheng, K. C.
See **Moutsoglou, A.**
Chern, C. -S. and Long, R. R.
A New Theory of Turbulent Thermal Convection Over Heated Surfaces. 80-HT-77.
Chern, J. M.
See **Kamal, S. A.**
Cherney, W.
See **Yao, L. S.**
Cheung, F. B., Stein, R. P., Epstein, M., Gabor, J. D. and Bingle, J. D.
Nonlinear Thermal Interaction between a Heat-Generating Particulate Bed and a Solid. 80-HT-1.
Cheung, T. K.
See **Howe, B. M.**
Cheung, Y. K.
See **Chow, L. C.**
Chi, M. R.
Unsteady Aerodynamics in Stalled Cascade and Stall Flutter Prediction. 80-C2/Aero-1.
Chiang, C. H. and Chung, T. -T.
Analytical Synthesis for Four-Bar Function Generators to Match Prescribed Differential Coefficients. 80-DET-33.
Chiang, C. W. and Hopkins, D. C.
Solar Brayton Cycle for Heating and Cooling. 80-WA/Sol-33.

Chiang, C. W.
See **Hopkins, D. C.**
Chiang, C. W.
See **Wang, H. F.**
Chiang, Y. F.
See **Chaturvedi, K.**
Chih-Hsin, C.
Application of the Theory of Conjugate Surfaces in Mechanisms Design: Part 1—General Concepts. 80-DET-29.
Chiou, W.
See **Jones, D.**
Chiou, J. P.
The Effect of Longitudinal Heat Conduction on the Thermal Performance of the Flat Plate Solar Collector. 80-C2/Sol-5.
Chiou, J. S.
See **Chen, C. J.**
Chisholm, D.
See **Grant, I. D. R.**
Cho, D. H.
See **Chan, S. H.**
Cho, S. H. and Chun, U. H.
Surface Temperature Rise of a Rifle Barrel During Continuous Firing. 80-HT-103.
Cho, S. K.
See **Lee, S. L.**
Choi, M. K. and Morehouse, J. H.
Thermal and Economic Assessment of Ground-Coupled Storage for Residential Solar Heat Pump Systems. 80-WA/Sol-10.
Chongrungreong, S.
See **Sauer, H. J.**
Choubey, M. and Rao, A. C.
Optimum Sensitivity Synthesis of a Cam System Incorporating Manufacturing Tolerances. 80-DET-31.
Chouchan, D.
Small-Scale Observations of Wind Effects Penetration in the Open Sea. 80-WA/HT-66.
Chow, G. C. and Reethof, G.
A Study of Valve Noise Generation Processes for Compressible Fluids. 80-WA/NC-15.
Chow, J. C. F.
See **Rabadi, N. J.**
Chow, L. C., Cheung, Y. K. and Tien, C. L.
A Fourth-Order Finite-Difference Scheme for the Heat Conduction Equation. 80-HT-89.
Chraplyvy, A. R.
See **Tishkoff, J. M.**
Christopher, D. M. and Pearson, J. T.
Parametric Analysis of Louvered Air-Heating Solar Collectors. 80-WA/Sol-38.
Chu, A. W., Ramchandani, M. and Mahoney, J. B.
A PWR Secondary System Behavior for Postulated Pipe Rupture. 80-WA/NE-1.
Chu, L. L., Cakmak, A. S. and Askar, A.
Born Approximation for Wave Scattering in Elastodynamics. 80-C2/PVP-72.
Chuang, A.
Nonlinear Dynamic Analysis of a Peripheral Seal on an HTGR Core Subjected to Seismic Support Motions. 80-C2/PVP-21.
Chudzinski, J.
See **Kryszewski, J.**
Chun, U. H.
See **Cho, S. H.**
Chung, B. T. F. and Naraghi, M. H. N.
A Formulation for Radiative View Factors from Spheres to a Class of Axisymmetric Bodies. 80-WA/HT-58.
Chung, J. S.
See **Felippa, C. A.**
Chung, K. S. and Thompson, D. H.
A Calculational Method for Combined Natural Circulation and Forced Convection Flow in a Channel. 80-HT-79.
Chung, T. -T.
See **Chiang, C. H.**
Cichanowicz, E.
See **White, D. J.**
Cincotta, G. A.
See **Caruvana, A.**
Citerley, R.
See **MacNeal, R. H.**
Citerley, R. L., Kienholz, D. A. and Gibson, W. C.
Assessment of Structural Effects in Acoustic Transient Experiments. 80-C2/PVP-122.
Clark, G.
See **Haves, P.**
Clark, G.
See **Rudzki, J. E.**
Clark, G.
See **Wolff, W. J.**
Clark, J. A. and Mellor, A. M.
Probe Effects in Gas Turbine Combustor Emission Measurements. 80-GT-71.
Clark, J. S.
Status of the DOE/NASA Critical Gas Turbine R & T Project. 80-GT-104.
Clark, R. A.
See **Utt, M. E.**
Clifford, D. A.
See **Matson, J. V.**
Coaker, J. W.
No Man Is an Island. 80-WA/Mgt-5.
Cohen, M.
See **Gilbert, K. T.**
Cohn, A.
See **Bauserman, G. W.**
Cohn, A
See **DeCorso, S. M.**
Cohn, A.
See **Horner, M. W.**
Cohn, A.
See **Singh, P.P.**
Cokonis, T. J.
A Supermini Based CADMAT System. 80-C2/Aero-8.
Colbourne, J. R.
The Design of Undercut Involute Gears. 80-C2/DET-67.
Colbourne, J. R.
The Kinematics of Crossed Helical Gears. 80-DET-37.
Colbourne, J. R.
Reduction of Profile Error in Hobbed Involute Spur and Helical Gear Teeth. 80-C2/DET-68.
Collin, L. T.
The Future Marine Propulsion System, Trends, Problems and Possibilities. 80-DGP-38.
Colosimo, D. D.
See **Sternlicht, B.**
Con, V. N., Heller, R. A., Singh, M. P. and Tuyen, L. D.
Thermal Stress in a Composite Cylinder by Finite Difference Technique. 80-HT-107.
Conaway, J. H.
Structural Engineering Software on Small Computers. 80-C2/Aero-7.
Conkey, R. S.
See **Tatge, R. B.**
Connolly, J. M.
See **Ortega, J. K. E.**
Constant, E. W.
Getting it Out of the Ground: Engineering Progress and the Locus of Skill. 80-Pet-64.
Conta, L. D.
Alternate Fuels and the Diesel Engine. 80-DGP-37.
Cook, R. D.
See **Bretl, J. L.**
Cook, R. S. and Token, K. H.
Heat Pipe Avionic Thermal Control Systems. 80-ENAs-4.
Cooke, C. J.
Education for Design — A U. K. Viewpoint. 80-C2/DE-2.
Cooley, D. B. and Shieh, G. P.
Fatigue Analysis of Railroad Freight Car Truck Bolster. 80-WA/RT-6.
Coombs, M.
See **Greeven, M.**
Cooperrider, N. K.
See **Fries, R. H.**
Coppola, E. N.
See **Angello, L. C.**
Corley, T. L.
See **Kalfadelis, C. D.**
Cornelius, D. K.
See **Sharma, M. P.**
Cornwell, K., Duffin, N. W. and Schüller, R. B.
An Experimental Study of the Effects of Fluid Flow on Boiling within a Kettle Reboiler Tube Bundle. 80-HT-45.
Costello, G. A.
See **Velinsky, S.**
Cotchin, C. D.
See **Grant, I. D. R.**
Cotterell, B.
The Split Nut: An Easy to Fit Nut with a Higher Inherent Strength. 80-WA/DE-6.
Cotton, K. C.
See **Bornstein, B.**
Coulter, D. M.
Calculation of Flowing Gas Temperatures Considering Potential and Kinetic Energy Changes. 80-Pet-13.
Cox, C. H.
Design of Solar Cells for Use in Photovoltaic/Thermal Collectors. 80-WA/Sol-37.
Cox, J. C. and Schultz, L. A.
Brine Channel Enlargement in Sea Ice During Spring Thaw. 80-WA/HT-18.
Cozzuol, J. M., Fauble, T. J. and Harvego, E. A.
An Investigation of Small Break Loss-of-Coolant Phenomena in a Small Scale Nonnuclear Test Facility. 80-WA/NE-2.
Crabtree, R. E., Saba, M. P. and Strang, J. E.
The Cabin Air Conditioning and Temperature Control System for the Boeing 767 and 757 Airplanes. 80-ENAs-5.
Craig, J. J.
See **Raibert, M. H.**
Crawford, H. L.
See **Eggers, P. E.**
Crawford, L. W.
See **Roy, G. D.**
Crawford, W. R.
See **Wussler, A. J.**
Cremers, C. J. and Mehra, V. K.
Frost Formation on Vertical Cylinders in Free Convection. 80-WA/HT-22.
Crichfield, S. O.
Governmental Regulations Vs. Pipeline Expenditures. 80-Pet-43.
Crichlow, H. B.
See **Tiab, D**
Crisp, J. N.
See **Yimer, B.**
Cross, F. L., Hesketh, H. E., Laga, H. J. and York, D. R.
Characterization of Dust and Emissions from a Taconite Bulk Handling Facility. 80-WA/APC-2.
Crow, D. E., Vanco, M. R., Weina, H. and Singer, I. D.
Results from Tests on a High Work Transonic Turbine for an Energy Efficient Engine. 80-GT-146.
Crupi, J.
See **Jones, D. C.**
Cummings, J. M.
User's Experience with Instrumented Couplings for Continuous Measurement of Horsepower and Alignment on Large Turbomachinery Trains. 80-C2/DET-52.
Cunningham, J. M.
Passive Thermal Control of the ASALM-PTV Ejectable Nozzle. 80-ENAs-8.
Cunningham, R.
See **Zorzi, E. S.**
Curlee, N. J.
See **Baum, A. J.**
Curry, C. E. and Wei, A. C.
Time between Overhaul vs Premature Removal Rates as Turbine Design Considerations. 80-GT-35.
Curtil, R.
See **Magnet, J. L.**
Curtis, D.
See **Huang, H.**

Cuypers, M. H.
Numerical Evaluation of the Torque Capacities of Mechanical Drives, Especially for Continuously Variable Transmissions. 80-C2/DET-120.

D

Dadras, P.
Axisymmetric Upset Forging: A Semi-Empirical Approach. 80-WA/Prod-21.
Dahlke, H. J. and Weiner, E. O.
Seismic Transient Analysis of a Containment Vessel with Penetrations. 80-C2/PVP-81.
Daikoku, T.
See **Nakayama, W.**
Dalcher, A. W.
See **Jaquay, K. R.**
Dallman, J. C. and Kirchner, W. L.
De-Entrainment on Vertical Elements in Air Droplet Cross Flow. 80-WA/HT-46.
Dambski, J. W.
Interaction Analysis of Cylindrical Vessels for External Pressure and Imposed Loads. 80-C2/PVP-2.
Daniel, K. J. and Shah, R. P.
Evaluation of Scale-up Parameters for an Advanced Air Blown Fixed-Bed Gasifier. 80-JPGC/GT-6.
Dant, C. C.
See **Berry, W. E.**
Darkazalli, G.
The Parallel Heat Pump and Photovoltaic Heating and Cooling — Phase II. 80-WA/Sol-40.
Darlaston, B. J. L.
See **Baum, M. R.**
Darnell, J. R., Westsik, J. H. and Lam, E. Y.
Conceptual Design of a Combined Cycle Solar Hybrid Power System. 80-C2/Sol-11.
Datseris, P.
Principles of a Heuristic Optimization Technique as an Aid in Design—An Overview. 80-DET-44.
Daudet, H. C. and Trimble, S. W.
Evaluation Method for Closed Cycle Gas Turbines in Cogeneration Applications. 80-GT-176.
Davall, P. W.
See **Nikiforuk, P. N.**
Davidson, G. W.
See **Sauer, H. J.**
Davies, R. T.
See **Martin, K. F.**
Davies, S. M., Fox, J. N. and Kraus, S.
Conceptual Design Study Reactor System Design. 80-C2/NE-2.
Davis, E. J.
See **Bonano, E. J.**
Davis, F.
See **Fraize, W.**
Davis, L. R.
See **Gegoric, M.**
Davis, S. H. and Kissinger, L. D.
The Factors Influencing the Formation of Li_2Co_3 from LiOH and CO_2. 80-ENAs-45.
Davy, W. C.
See **Nicolet, W. E.**
Dayen, L.
See **Hanks, J.**
Dear, T. A.
Introduction to Design Specification Criteria for Acoustical Insulation. 80-WA/NC-10.
DeBell, G. C. and Swank, L. R.
Testing of Ceramic Rotors—Hot Spin Test Rig and Rotor Preparation. 80-GT-144.
DeBoe, H. M. and Lutwen, R. C.
Available Methods for NO_X, SO_2 and Particulate Control. 80-IPC/Pwr-10.
DeBoer, P. C. T.
Droplet Burning and Evaporation Times for Distillate and Residual Fuel Oils. 80-GT-59.
Debuhr, A. P.
See **Meyer, B. R.**
DeCorpo, J. J., Wyatt, J. R. and Saalfeld, F. E.
Atmospheric Monitoring in Submersibles. 80-ENAs-31.
DeCorso, S. M., Vermes, G., Lee, S. Y., Singhal, S. C. and Cohn, A.
Combustion Turbine Design Guidelines Based on Deposition/Corrosion Considerations. 80-GT-72.
Deffenbaugh, D. M.
Design Issues for a Cost-Effective Solar Industrial Process Heat System. 80-C2/Sol-17.
DeFouw, E. A.
Corporate Growth Through Engineering Innovation and Capital Investment. 80-WA/Mgt-9.
de Jalon, J. G.
See **Sanchez, M. N.**
Delale, F.
See **Erdogen, F.**
Delong, J. F.
See **Rahoi, D. W.**
Demirjian, A. M.
Electrical Conductivity and Hall Parameter Measurements in Faraday MHD Generators. 80-WA/HT-9.
Demirjian, A. M.
MHD Electrode Performance; Heat Transfer and Voltage Drops. 80-WA/HT-10.
Dennison, E. E.
See **Ying, S. P.**
Derbalian, G., Egan, G. R. and Aboim-Costa, C.
Finite Element Axisymmetric Stress Analysis of 4-Inch Diameter Welded Pipe with Prescribed Residual Stresses. 80-C2/PVP-153.
Der Kiureghian, A.
See **Barlow, R. E.**
DeRossett, T. A.
See **Accorsi, J. V.**
Desai, P. V.
See **Bansal, R. K.**
Desai, P. V.
See **Ramalingam, S.**
De Santo, D. F.
Added Mass and Hydrodynamic Damping of Perforated Plates Vibrating in Water. 80-C2/PVP-121.
De Sivry, B. and Bonnet, C.
Electron Beam Weldability for Deepsea Pipelines. 80-Pet-57.
Desmond, R. M. and Karlekar, B. V.
Experimental Observations of a Modified Condenser Tube Design to Enhance Heat Transfer in a Steam Condenser. 80-HT-53.
Desmond, R. M. and Karlekar, B. V.
Experimental Observations of the Condensation of Steam on a Vibrating Horizontal Condensing Tube. 80-HT-52.
de Socio, L. M. and Gualtieri, G.
Convection in Microgravity Fields. 80-C2/Aero-4.
Desty, D. H.
See **Jenkins, B. G.**
De Wachter, L.
See **Van Haren, J.**
Dhir, V. K. and Cheng, H. M.
Transient Pool Boiling on Spheres Subjected to External Pressure Pulse. 80-HT-112.
Diab, M. R., Pearson, J. T. and Viskanta, R.
A Two-Dimensional Analysis of Flat Plate Air-Heating Solar Collectors. 80-HT-117.
Diel, M. and Mote, C. D.
Relative Motion Between Ski and Boot Under Impact Testing of Ski Bindings. 80-C2/DET-1.
DiPare, A. L.
Self-Conjugate Cam Design for a High-Speed Low-Cost Indexing Mechanism. 80-DET-14.
Dimmer, J. P.
See **Adams, M. L.**
DiNapoli, R. N.
See **Hauck, R. L.**
Dini, D. and Romanacci, R.
AGAVE—A Code for the Analysis of Unsteady Homogeneous Flow Along a Pipe Line. 80-C2/PVP-155.
DiPippo, R., Kestin, J., Avelar, E. M. and Khalifa, H. E.
Compound Hybrid Geothermal-Fossil Power Plants: Thermodynamic Analyses and Site-Specific Applications. 80-Pet-83.
Dirmhirn, I.
Solar Irradiance Availability in Mountainous Terrain. 80-C2/Sol-26.
Divakaruni, S. M.
See **Zimmerman, W. F.**
Dixit, B. S.
Analysis and Performance of Heat Pump Centered Community Heating and Cooling Systems Using Wastewater Effluent as the Energy Source. 80-Pet-30.
Dixon, M. W. and Huey, C. O.
The Cam-Link Mechanism: A General Overview and Specific Application to Rigid Body Motion. 80-DET-15.
Dobbins, W. B.
See **Jur, T. A.**
Dodge, J. H.
An Engineer's Introduction to Intellectual Property Law. 80-Pet-38.
Doherty, M. C. and Hall, D. H.
Steam Conditions for Large Coal Fired Cogeneration Plants. 80-IPC/Pwr-2.
Dokanish, M. A.
See **Elmadany, M. M.**
Domis, M. A.
Large Eddy Simulation of a Passive Scalar in Isotropic Turbulence. 80-HT-84.
Domoto, G. A.
See **Keung, C. S.**
Dorgan, C. E. and Ermer, D. S.
A Reliability Design and Catastrophic Failure Model for Exhaust Systems. 80-WA/Saf-1.
Dorrance, J. G.
Order Selection of Full and Broken Case Goods. 80-WA/HT-12.
Dougan, D. R.
See **Sharma, M. P.**
Douglas, W. J. M.
See **Saad, N. R.**
Dousis, D. A. and Finch, R. D.
A Yard Test of Acoustic Signature Inspection of Railroad Wheels. 80-WA/RT-2.
Driscoll, A. H.
See **Dzwilewski, P. T.**
Dubois, B. C.
New Possibilities Offered by Using Flexible Pipe for Production Application in the Gulf of Mexico. 80-Pet-19.
Dubrovsky, A. F.
Machine Unit with Controlled Impulse Progressive Transmission. 80-DET-36.
Duclong, T.
See **Baker, J. E.**
Dudley, J. C.
See **Sundell, R. E.**
Duffin, N. W.
See **Cornwell, K.**
Duffy, R. E.
See **Sneck, H. J.**
Duffy, T. E.
See **Roberts, P. B.**
Dumouchel, P. E.
See **Turaga, M.**
Duncan, J. M., Lucia, P. C. and Bell, R. A.
Simplified Procedures for Estimating Settlement and Bearing Capacity of Ringwall Footings on Sand. 80-C2/PVP-84.
Duncan, R.
See **Lukas, H.**
Duncan, R. L.
See **Grant, J. R.**
Dunning, S. W.
See **Kingcombe, R. C.**
Durgin, G. A.
See **Blanton, J. C.**
Durstine, J. W.
The Age of the Engineer. 80-C2/DE-3.
Dzwilewski, P. T. and Driscoll, A. H.
Long Coring Facility Winch and Cable System. 80-WA/OCE-9.

E

East, G. H.
A Parametric Approach to Inelastic Elbow Flexibility. 80-C2/PVP-128.
East, G. H.
See **Roemer, R. E.**
Eastwood, J.
See **Greeven, M.**
Eberle, M. K.
The Marine Diesel Engine—The Answer to Low Grade Fuels. 80-DGP-16.

Eby, R. J. and Karam, R. D.
Optimization of a Fin-Plate Heat Exchanger for Cooling Avionic Electronics. 80-HT-98.
Eccles, E. S.
Digital Control for V/Stol Powerplants. 80-GT-122.
Eccles, E. S.
Digital Controls for Helicopter Engines. 80-GT-121.

Eccles, E. S.
Software for Flight Critical Digital Engine Controls. 80-GT-119.
Echigo, R.
See **Fukuda, K.**
Eckels, P. W.
See **Rabas, T. J.**
Eden, A.
Thermographic Techniques Applied to Solar Collector Systems Analysis. 80-C2/Sol-27.
Edgar, T. F.
See **Vogel, E. F.**
Egan, G. R.
See **Derbalian, G.**

Eggers, P. E., Crawford, H. L., Trujillo, A. A., Pope, R. B. and Yoshimura, H. R.
Thermal Analysis of HNPF Spent Fuel Shipping Container in Torch Environments. 80-HT-37.
Ehle, P. E. and Haug, E. J.
A Logical Function Method for Dynamic and Design Sensitivity Analysis of Mechanical Systems with Intermittent Motion. 80-DET-39.

Ehrentraut, O., Koroschetz, F. and Grobuschek, F.
Reduction of the Wall-Thicknesses of Slide Bearings for Diesel Engines—Requirements, Effects and Limits. 80-DGP-31.
Ehrman, C. S., Golan, S. and Garabedian, G.
LMFBR Conceptual Design Study Balance of Plant Design. 80-C2/NE-3.

Eichhorn, R. and Hasan, M. M.
Mixed Convection about a Vertical Surface in Cross-Flow: A Similarity Solution. 80-HT-129.
Ekert, K. and Kowalewicz, A.
Analysis of the Influence of Supercharged Air Parameters on Emission of Diesel Engine. 80-DGP-1.

El-Genk, M. S. and Moore, R. L.
An Analysis of Molten Debris Freezing and Wall Erosion in a Severe RIA Test. 80-HT-12.
Ellison, P. C.
See **Gabor, J. D.**
ElMadany, M. M., Dokanish, M. A. and Allan, A. B.
Road Vehicle Train Response to Random Road Surface Undulations. 80-WA/DSC-1.
Elsayed, M. M.
See **Taha, I. S.**

El-Shanawany, M. S. and Lefebvre, A. H.
Airblast Atomization: the Effect of Linear Scale on Mean Drop Size. 80-GT-74.
ElSherbiny, S. M., Raithby, G. D. and Hollands, K. G. T.
Heat Transfer by Natural Convection Across Vertical and Inclined Air Layers. 80-HT-67.
Elston, M. J. H.
See **Baum, M. R.**

Elu, P. and Kemper, Y.
Performance of a Nutating Traction Drive. 80-C2/DET-63.
Emery, A. F., Perl, M., Kobayashi, A. S. and Love, W. J.
Ductile Axial Crack Extension in Pipes. 80-WA/PVP-5.
Emery, A. F., Perl, M., Love, W. J. and Kobayashi, A. S.
On the Motion of an Axial Through Crack in a Pipe. 80-C2/PVP-99.
Emery, A. F.
See **Awaji, H.**
Emery, A. F.
See **Baum, M. R.**
Emery, A. F.
See **Perl, M.**
Enderle, G.
A Distributed Graphics System Based on a Standard Graphics File. 80-C2/PVP-147.
Endo, Y.
See **Saeki, K.**
Englmeier, R. F.
A Utility's Q. A. Program as Applied to the Suppliers. 80-C2/PVP-12.
Epel, L. G.
See **Agrawal, A. K.**
Ephraim, M.
The GP-50 Locomotive. 80-RT-6.
Epstein, H. I.
Stresses and Displacements for Floating Pan Roofs. 80-C2/PVP-80.
Epstein, H. I.
See **Buzek, J. R.**
Epstein, M.
See **Cheung, F. B.**
Erdman, A., Nelson, E., Peterson, J. and Bowen, J.
Type and Dimensional Synthesis of Casement Window Mechanisms. 80-DET-78.
Erdogan, F. and Delale, F.
Ductile Fracture of Pipes and Cylindrical Containers with a Circumferential Flaw. 80-C2/PVP-68.
Erickson, A. R.
See **Tolokan, R. P.**
Ermer, D. S.
See **Dorgen, C. E.**
Ernst, D.
See **Weck, M.**
España, M.
See **Rodriguez, J.**
España, M. D.
Linear Optimal Estimation of Discrete Bilinear Systems. 80-WA/DSC-14.
Essenhigh, R. H.
See **Barriga, A.**
Estrin, M.
Optimization of Tooth Proportions for a Gear Mesh. 80-C2/DET-101.
Ettles, C. M. M.
See **Taha, M. M. A.**
Evans, A. L. and Reid, R. L.
Heat Transfer in an Air Thermosyphon Permafrost Protection Device. 80-Pet-22.
Evans, R. E.
A Journey into Frustration. 80-Pet-75.
Everstine, G. C.
See **Neilson, H. C.**
Eyler, L. L.
Predictions of Convective Losses from a Solar Cavity Receiver. 80-C2/Sol-8.
Ezekoye, L. I.
Predicting Maximum Closing Surge Pressures Included by Externally Actuated Valves. 80-C2/PVP-142.

F

Fagerlund, A. C.
Sizing Valves for Two-Phase and Subcooled Liquid Flows. 80-WA/HT-64.
Fahidy, T. Z.
See **Qureishi, M. S.**

Fahmy, M. A. K. and Jonckheere, R.
Deflection and Bending Moment Distribution of Gear Teeth of Double Circular Arc Profile Using Three-Dimensional Holographic Interferometry. 80-C2/DET-109.
Fairbanks, F.
The Determination of Deviation Angles at Exit from the Nozzles of an Inward Flow Radial Turbine. 80-GT-147.
Farag, I. H. and Allam, T. A.
A Model to Calculate Carbon Dioxide Standard Emissivities. 80-HT-138.
Fauble, T. J.
See **Cozzuol, J. M.**
Faulstich, H. I.
See **Kojima, M.**
Fawcett, J. N. and Burdess, J. S.
An Experimental Investigation of the Vibration of Toothed Belts. 80-C2/DET-94.
Fear, J. S.
NASA Broad-Specification Fuels Combustion Technology Program—Status and Description. 80-GT-65.
Fechner, G. and Lang, V.
Wear and Operating Cost Reduction of Slurry Pumps by Means of Hydrodynamic Variable Speed Couplings. 80-WA/MH-3.
Fedele, J. B. and Petrie, G. L.
A Study of the Compatibility of Mobile Drilling Units with the Gulf of Alaska Environment. 80-Pet-82.
Fegan, G. R. and Percival, C. D.
Planning for Electric Utility Solar Applications: The Effects on Reliability and Production Cost Estimates of the Variability in Demand. 80-C2/Sol-25.
Fejer, A. A.
The Compound Heat Pump Gas Turbine: An Approach to Energy Conservation for Process Industries. 80-GT-180.
Feldman, K. T.
Experience with the Heating Plant Heat Recovery System at the University of New Mexico. 80-WA/HT-16.
Feldman, K. T., Marjon, P. L. and Hahn, D. R.
Testing of Heat Pipes for Cooling a 425°C Injection Mold. 80-HT-100.

Felippa, C. A. and Chung, J. S.
Nonlinear Static Analysis of Deep Ocean Mining Pipe: Part I. Modeling and Formulation. 80-Pet-48.
Fender, D. A.
See **Boyer, R. C.**
Fenton, D. L.
See **Krivokapich, G. A.**
Fernandes, J. H.
Alternative Energy Technologies and Their Impact on Performance Test Codes. 80-WA/PTC-2.
Fertis, D. G.
See **Peterson, D.**
Filippi, F., Nervegna, N. and Zarotti, G. L.
Decision Making Support in the Assessment of Modular Radiator Systems. 80-ENAs-11.
Fillo, J. A.
First Wall Thermal Hydraulic Models for Fusion Blankets. 80-HT-51.
Finch, R. D.
See **Dousis, D. A.**

Fincher, L. and Griffin, F. D.
Sucker Rod Pumping Offshore. 80-Pet-18.
Finet, A.
A Closer Look at Gravimetric Feeder Design Using Load Cells. 80-JPGC/Pwr-13.
Firla, A. P. and Kozak, J.
Control Systems for CANDU PHW Reactors: Review of Design Philosophy and Principles of Control. 80-WA/DSC-16.
Firmin, A. and Wallis, H. V.
The Architecture of the ASAS Finite Element System and Its Advantages in the Mini-Computer Environment. 80-C2/PVP-133.
Firmin, A. and Jones, R. T.
FESDEC—A New Finite Element System for Desk Top Computers. 80-C2/PVP-92.

Fisher, D. G.
See **Wan, R.**
Fisher, F. G.
See **Hawthorne, K. L.**
Fisher, H. D.
An Exact Modal Analysis of the Static Deformation of Circular Rings and Long Cylinders. 80-C2/PVP-8.
Flannery, J. V.
See **Reeve, J. L.**
Fleiss, R.
The Radial Behavior of Gear Couplings. 80-C2/DET-64.
Flemming, D.
See **Zorzi, E. S.**
Flores, A.
See **Healey, A. J.**
Flower, W. L.
See **Wang, J. C. F.**
Flynn, W. R.
See **Stratton, W. E.**
Förster, S., Jaegers, H., Quell, P., Schindler, S., Pohlmann, H. J. and Krauth, A.
Development of High Temperature Ceramic Plate-Type Heat Exchanger-and Burner-Elements. 80-HT-61.
Folsom, B. A.
See **Kalfadelis, C. D.**
Foltz, F. L.
See **Temple, T. W.**
Forbes, J. W. and Mohaupt, U. H.
Design and Development of a Seal for High Pressure Pumps and Intensifiers. 80-C2/PVP-19.
Forest, T. W.
The Adhesion of Ice to Low Energy Solids. 80-WA/HT-19.
Fort, P.
Computer Aided Design, Manufacturing and Inspection System for Spiral Bevel Gears. 80-C2/Det-127.
Fowler, B. G.
See **Frazier, L. E.**
Fowler, J. and Stermer, R. A.
Flowline Stress Analysis for Remote Completion Operations. 80-Pet-55.
Fowler, J. H.
See **Schweitzer, R. L.**
Fox, G. R.
See **Shah, R. P.**
Fox, J. N.
See **Davies, S. M.**
Fraas, A. P.
Production of Motor Fuel and Methane from Coal Via a Flash Pyrolysis Process Closely Coupled to a Fluidized Bed Utility Steam Plant. 80-WA/Fu-7.
Fraikin, C. J.
See Fraikin, M. P.
Fraikin, M. P., Portier, J. J. and Fraikin, C J.
Application of a K-e Turbulence Model to an Enclosed Buoyancy Driven Recirculating Flow. 80-HT-68.
Fraize, W., Davis, F. and Manning G.
Utility System Planning Effects on the Economic Merit of Advanced Combined Cycle Power Systems. 80-GT-105.
Franca, T.
See **Zappa, G.**
Frank, A. A.
See **Beachley, N. H.**
Frank, R. T.
See **Tolokan, R. P.**
Frazier, L. E., Fowler, B. G. and Boseman, J. J.
Operability Assurance Testing of ASME Code, Class 1, Safety/Relief Valves. 80-C2/PVP-29.
Free, J. C. and Anderson, D. O.
Elements of an Optimization Software Library for Engineering Design. 80-WA/DSC-41.
Freeman, R. A. and Tesar, D.
The Generalized Coordinate Selection for the Dynamics of Complex Planar Mechanical Systems. 80-DET-85.
Fretter, E. F.
See **Suchsland, K. E.**
Fricke, H. D., Webster, D. J., McIlroy, K. and Bartz, J. A.
Heat Transfer Performance of a Dry and Wet Dry Advanced Cooling Tower Condenser. 80-HT-99.
Friedman, R. and Stockemer, F. J.
Temperature and Flow Measurements on Near-Freezing Aviation Fuels in a Wing-Tank Model. 80-GT-63.
Fries, R. H., Cooperrider, N. K. and Law, E. H.
Railway Freight Car Field Tests. 80-WA/DSC-7.
Fujikawa, Y., Nakanishi, K., Kanegae, H. and Sakaki, Y.
The Development of the Quick-Start Gas Turbine Standby Generator Set. 80-GT-115.
Fujio, H. and Aida, T.
Study on Gear Distortions Caused by Hard ening. 80-C2/DET-51.
Fukuda, K., Hasegawa, S., Echigo, R. and Akinaga, M.
Improvement of High Temperature Heat Exchanger Efficiency by Inserted Porous Metal Plates. 80-HT-59.
Fuller, J. D. and Rudek, F. P.
O_2 Sensing for Environmental Control and Monitoring Systems. 80-ENAs-41.
Fulu, M.
Roles of Water in Soil Dynamics Problems. 80-C2/PVP-61.
Funk, G. E. and Lee, L. H. N.
Dynamic Buckling of Inelastic Spherical Shells. 80-C2/PVP-88.
Fynsk, A. W.
See **Simon, D. E.**

G

Gabor, J. D., Cassulo, J. C. and Ellison, P. C.
Heat Transfer from Internally Heated Hemispherical Pools. 80-HT-16.
Gabor, J. D.
See **Cheung, F. B.**
Gadgil, A.
See **Bauman, F.**
Gagne, R. A.
See **Metcalfe, A. G.**
Galford, J. E.
See **Au-Yang, M. K.**
Gandhi, M. V. and Thompson, B. S.
The Finite Element Analysis of Flexible Components of Mechanical Systems Using a Mixed Variational Principle. 80-DET-64.
Gandhi, M. W.
See **Thompson, B. S.**
Gandolfo, G. and Salvioni, B.
High Quality Seamless Carbon Steel Pipes for Low Temperature Service. 80-Pet-90.
Gardber, W. B. and Gray, D. E.
The Energy Efficient Engine (E^3)—Advancing the State of the Art. 80-GT-142.
Garabedian, G.
See **Ehrman, C. S.**
Garg, V. K. and Thomas, T. J.
Comparative Study of Direct Numerical Integration Schemes in Linear and Nonlinear Analysis of a Dynamic System. 80-WA/DSC-26.
Garg, V. K.
See **Thomas, T. J.**
Garmirian, J. E., Manning, M. P. and Reid, R. C.
The Use of Nickel and Cobalt Catalysts in a Bosch Reactor. 80-ENAs-15.
Garreth, R. H.
Marketplace Developments in Storage Furniture, Racks and Shelves. 80-WA/MH-11.
Gartling, D. K.
See **Hickox, C. E.**
Gasser, R.D. and Pratt, W. T.
Thermal Response of a Molten Pool with Stefan Type Boundary Conditions. 80-HT-9.
Gaudio, R. and Pecorari, C.
Four-Stroke Constant Pressure Supercharged Diesel Engines: Experimental Research and Operating Results. 80-DGP-26.
Gaugler, R. E. and Russell, L. M.
Streakline Flow Visualization Study of a Horseshoe Vortex in a Large-Scale, Two-Dimensional Turbine Stator Cascade. 80-GT-4.
Gauvin, R., Girard, P. and Yelle, H.
Investigation of the Running Temperature of Plastic/Steel Gear Pairs. 80-C2/DET-108.
Gaylo, K. R.
See **Scarton, H. A.**
Gehlen, P. C.
See **Popelar, C. H.**
Genetti, W. E., Yurich, S. P. and Vanderhoof, D. W.
Heat Transfer from Vertical Finned Tube Bundles in a Fluidized Bed. 80-HT-118.
Gerchow, F.
Continuous Vacuum Pressure Systems. 80-WA/MH-2.
Gerhart, P. M.
See **Jorgensen, R.**
Gerhold, B.
See **Wilkes, C.**
Gerlach, H.
Thermal Accommodations Techniques for Payloads On-Board Spacelab. 80-ENAs-20.
Ghonem, H., Gonsalves, R. and Bartley, G. W.
Comparative Performance of Type II and Premium Trucks. 80-RT-8.
Giamei, A. F.
See **Pratt, T. K.**
Giannovario, J. A.
Experiment Operations in Spacelab. 80-ENAs-40.
Gibbs, R. T. and Soo, S. L.
Heat Transfer and Reaction Rate in Steam Gasification of Coal. 80-WA/HT-14.
Gibson, W. C.
See **Citerley, R. L.**
Gierszewski, P. J., Mikic, B. and Todreas, N. E.
Natural Circulation in Fusion Reactor Blankets. 80-HT-69.
Gilbert, K. T., Cohen, M. and Houser, D. R.
Energy Transfer in Loaded V-Belt Systems. 80-C2/DET-99.
Gilbrech, D. A.
See **Lee, J. F.**
Giles, G. E., Kirkpatrick, J. R. and Wood, R. F.
Laser Annealing of Solar Cell Wafers. 80-HT-13.
Giramonti, A. J.
See **Lehman, S. J.**
Giramonti, A. J.
See **Lessard, R. D.**
Girard, P.
See **Gauvin, R.**
Gladden, H. J.
Similarity Tests of Turbine Vanes—Effects of Ceramic Thermal Barrier Coatings. 80-HT-24.
Glaser, P. E.
A Global Solar Power Satellite System. 80-C2/Aero-6.
Glassford, A. P. M.
See **Liu, C. K.**
Glavas, X. G.
See **Thompson, R. E.**
Gleason, C. C. and Martone, J. A.
Fuel Character Effects on J79 and F101 Engine Combustion Emissions. 80-GT-70.
Gleason, C. C. and Bahr, D. W.
Fuel Property Effects on Life Characteristics of Aircraft Turbine Engine Combustors. 80-GT-55.
Gluckman, M. J.
See **Shah, R. P.**
Goedde, E.
The Possibilities of Pipelines for the Transport of Coal and Other Solids in West Germany and North West Europe. 80-Pet-5.
Goeller, B.
See **Krieg, R.**

Gogrewe, H.-U.
See **Weck, M.**
Golan, M. and Waldén, Å.O.
Some Operational and Equipment Failures in the Ekofisk North Sea Blowout. 80-Pet-89.
Golan, S.
See **Ehrman, C. S.**
Goldberg, A. J. and Williams, C. E.
Environmental Constraints to the Deployment of Coal Combustion Systems. 80-Pet-28.
Goldstein, N. A.
See **Spada, A. J.**
Gollahalli, S. R. and Javadi, S. H.
Composition Structure of Burning Sprays of Jet A Fuel and Its Emulsions with Water. 80-GT-57.
Gomez, A. V.
See **Belie, R. G.**
Gong, E. Y.
See **McMaster, W. H.**
Gonsalves, R.
See **Ghonem, H.**
Goodling, E. C.
More on Flexibility Analysis of Buried Pipe. 80-C2/PVP-67.
Goodling, J. S.
See **Buck, C. L.**
Goodwin, C.
See **Outcalt, S. I.**
Goodwin, W. W.
See **Sundell, R. E.**
Gordon, C. R.
See **Tatge, R. B.**
Goswami, T. K. and Klett, D. E.
Comparison of Several Models for Long Term Monthly Average Daily Insolation on Horizontal Surfaces and the Estimation of Horizontal Surface Insolation for 16 U.S. Locations. 80-WA/Sol-28.
Gould, R. W.
See **Vance, J. M.**
Grabowski, W. V.
See **Hutchins, W. H.**
Gradie, R. J.
See **Kirik, M. J.**
Graham, D. S. and Machemehl, J. L.
Appropriate Force Coefficients for Ocean Pipelines. 80-Pet-61.
Graham, R. C., Olver, A. and Macpherson, P. B.
An Investigation into the Mechanisms of Pitting in High-Hardness Carburized Steels. 80-C2/DET-118.
Grant, G.
Design and Development of a Once-Through Helical Coil Steam Generator for Large LMFBR Plants. 80-C2/NE-29.
Grant, I. D. R., Chisholm, D. and Cotchin, C. D.
Shellside Flow in Horizontal Condensers. 80-HT-56.
Grant, I. D. R.
See **Brisbane, T. W. C.**
Grant, I. D. R.
See **Polley, G. T.**
Grant, J. R., Holladay, T. E., Boenig, F. H. and Duncan, R. L.
Design and Operation of Low-No_x Combustors with Medium Heating Value, Coal-Derived Gas. 80-GT-14.
Grantham, W. J.
Estimating Reachability Boundaries for Resource Management Systems. 80-WA/DSC-5.
Graves, R. L.
Effect of Pressure and Turbine Inlet Temperature on the Efficiency of Pressurized Fluidized Bed Power Plants. 80-GT-102.
Gray, D. E.
See **Gardner, W. B.**
Gray, M. A.
The Effects of a Volatile Fireside Manganese Additive on Coal-Fired Utility Boiler Operation. 80-JPGC/Fu-4.
Green, S. J. and Steininger, D. A.
Pressurized Water Steam Generators—Problems and Progress. 80-C2/NE-8.
Greene, G. A., Jones, O. C. and Abuaf, N.
Correlation of Local Heat Flux from Inclined Volume-Heated Pools in Bubbly Flow. 80-HT-91.
Greening, J. H., Barlow, R. J. and Loveless, W. G.
Load Sharing on the Teeth of Double Enveloping Worm Gear. 80-C2/DET-43.
Greeven, M., Coombs, M. and Eastwood, J.
The Design of a Solar Receiver for a 25-KWe Gas Turbine Engine. 80-GT-131.
Gregoric, M., Davis, L. R. and Bushnell, D. J.
An Experimental Investigation of Merging Buoyant Jets in a Crossflow. 80-WA/HT-23.
Gregory, J. C.
See **Jaliwala, S. A.**
Greif, R.
See **Bauman, F.**
Greif, R.
See **Seban, R. A.**
Grewal, N. S. and Saxena, S. C.
Experimental Studies of Heat Transfer Between Bundle of Horizontal Tubes and a Gas-Solid Fluidized Bed. 80-HT-119.
Griesbach, T. J.
Dynamic Elastic-Plastic Behavior of Circumferential Cracks in a Pipe Subject to Seismic Loading Conditions. 80-C2/PVP-151.
Griffin, F. P. and Smith, R. N.
Approximate Solution for Freezing Adjacent to an Extended Surface. 80-HT-8.
Griffin, F. D.
See **Fincher, L.**
Grillenberger, T., Issler, L., Katzenmeier, G. and Scholl, K. H.
Fluid and Structure Dynamic Investigations of Check Valves Performed within the HDR Safety Program (Experimental and Analytical Results) 80-C2/PVP-141.
Grimpe, K.
Safety Coupling in Heavy-Duty Machine Operation Breaker Rings as Alternative to Shear Pins. 80-C2/DET-93.
Grin, W.
See **Hauck, R. L.**
Griswold, H. R. and Wilde, R. C.
Eva Equipment for Satellite Service. 80-ENAs-48.
Grobuschek, F.
See **Ehrentraut, O.**
Groghan, D. A.
See **Kandl, M. G.**
Gross, M. B.
See **Silling, S. A.**
Grosshandler, W. L.
Radiation from Nonhomogeneous Mixtures in Planar and Cylindrical Combustion Systems. 80-HT-43.
Groth, R. H.
See **Campbell, N. T.**
Gruber, H. and Reinhard, K.
Operational Experience with Large-Steam Turbines in Nuclear Power Plants. 80-JPGC/Pwr-4.
Grush, W. H., Lin, J. C., Linebarger, J. H. and Nelson, R. A.
Results and Predictions of Scaled, Nuclear Large Break Loss-of-Coolant Experiments. 80-WA/HT-49.
Gualtieri, G.
See **De Socio, L. M.**
Guan-Qing, C.
Seismic Behavior of the Qinhuangdao/Beijing Oil Pipeline in the Tangshan Earthquake. 80-C2/PVP-84.
Guang-Yuan, W.
The Earthquake Response of Reinforced Concrete Single-Story Factory Buildings. 80-C2/PVP-157.
Guenther, D. A.
See **Jones, D.**
Guillory, J. L.
High-Temperature Particulate Removed by Moving Bed Granular Filtration. 80-GT-116.
Gunbara, H.
See **Sakai, T.**
Guppy, J. G.
See **Agrawal, A. K.**
Gupta, S. K.
See **Jaluria, Y.**
Gupta, S. M. and Barash, M. M.
Machining Parameter Optimization for Multistation Synchronous Machines. 80-DET-60.
Gurbuz, O.
Design Concepts for Pipe Whip Restraints. 80-C2/PVP-56.
Gutman, Y.
Methods of Optimization for Nonlinear Problems. 80-DET-65.
Gutman, Y. I.
See **Litvin, F. L.**
Gvildys, J.
See **Chang, Y. W.**

H

Haas, L. L.
Latest Developments in the Manufacture of Large Spiral Bevel and Hypoid Gears. 80-C2/DET-119.
Haberman, L. K. and Lukas, M. P.
Compensating Transducer Temperature Sensitivity with Computerized Circuit Optimization. 80-DE-8.
Hafkemeyer, H. P.
Aspects of Thermal Control Analysis of Spacelab. 80-ENAs-12.
Hahn, D. R.
See **Feldman, K. J.**
Hailjinger, G.
See **Krieg, R.**
Hall, D. H.
See **Doherty, M. C.**
Hall, R. E. and Beard, J. T.
Performance and Air Pollutant Emissions of an Experimental Water/Residual Oil Emulsion Burner in a Commercial Boiler. 80-WA/APC-1.
Hall, R. E. and Lettieri, V.
The Responsibility of Technical Management Before, During and After a Technical Crisis. 80-WA/Mgt-8.
Halperson, S.
See **Huang, H.**
Hamaki, A.
See **Attia, A. Y.**
Hamann, J. E.
See **Pope, R. B.**
Hameed, S. and Cess, R. D.
Impact of a Global Warming on Biospheric Sources of Methane and Its Climatic Consequences. 80-WA/HT-2.
Hameed, S.
See **Cess, R. D**
Hammond, D. C.
See **Tishkoff, J. M.**
Hammond, J. K. and Harrison, R. F.
Nonstationary Response of Vehicles on Rough Ground—A State Space Approach. 80-WA/DSC-22.
Hanafi, A. and Karim, G. A.
An Analytical Examination of the Behavior of Oil Sand Fragments in Heated Streams. 80-WA/HT-33.
Haney, B. J.
See **Borio, E. T. L.**
Hanks, J. and Dayen, L.
Efficient Clutching and Braking of High Input-Energy Loads. 80-C2/DET-97.
Hanks, R. W.
Critical Velocities in Methanol-Coal Slurries. 80-WRK/Pet-4.
Hanks, R. W.
Slurry Pipeline Hydraulics: Principles, Problems and Solutions. 80-Pet-45.

Hanley, T. O'D. and Rao, S. R.
Freezing Potential Studies in Wet Clay Systems. 80-WA/HT-8.
Hanseth, E. J., Won, Y. S. and Leibowitz, L. P.
Application of a Reversible Chemical Reaction System to Solar Thermal Power Plants. 80-C2/Sol-14.
Hanseth, E. J.
See **Leibowitz, L. P.**
Hanson, L. D. and Bowman, D. G.
Operability Testing of Nuclear Safety Related Pumps. 80-C2/PVP-30.
Hanson, R. G.
Experimental Determination of Lower Plenum ECC Injection Effectiveness. 80-WA/HT-60.
Hardesty, D. R.
Diagnostics and Instrumentation Requirements for Advanced Power Systems. 80-GT-129.
Hardesty, D. R.
See **Wang, J. C. F.**
Hariharan, R. and Rajan, M. P.
Design and Development of a Load Compensated Flapper Nozzle Amplifier. 80-C2/DET-2.
Harkins, H. L.
Combined Cycles—An Alternative for Process Steam Systems. 80-Pet-85.
Haroun, M. A.
See **Housner, G.W.**
Harper, A. D.
2.5-MWe Coal-Fired, Atmospheric Fluidized Bed, Recuperated Closed Gas Turbine Electrical Power Generating Plant. 80-GT-132.
Harrell, J. P.
See **Allen, R. R.**
Harris, H. H.
See **Carson, W. H.**
Harrison, R. F.
See **Hammond, J. K.**
Harrje, D. T.
See **Carlson, A. C.**
Harshvardhan, Weinman, J. A. and Olson, W. S.
11.5 Micron Emission from Smokes Computed Using Finite Cloud Geometry. 80-WA/HT-1.
Hartman, P. J.
Moored Systems Designed to Sense Deep Ocean Earthquakes. 80-WA/OCE-10.
Hartman, P. J.
See **Petrie, G. L.**
Harvego, E. A.
See **Cozzuol, J. M.**
Harvey, J. W.
See **Hossne, A. J.**
Harwell, W.
The Thermal Canister Approach in Instrument Thermal Design. 80-ENAs-23.
Hasan, M. M.
See **Eichhorn, R.**
Hasan, M. M.
See **Singh, S. N.**
Haseler, L.
Condensation of Nitrogen in Brazed Aluminum Plate-Fin Heat Exchangers. 80-HT-57.
Hasegawa, S.
See **Fukuda, K.**
Hauck, R. L., Grin, W. and DiNapoli, R. N.
Light Weight Gas Turbine Drivers—Newest Trend in LNG Plant Design. 80-GT-169.
Haug, E. J.
See **Ehle, P. E.**
Haug, E. J.
See **Sohoni, V.**
Haug, E. J.
See **Wehage, R. A.**
Haves, P., Bentley, D. and Clark, G.
Heat Transfer in Passively Cooled Buildings. 80-HT-65.
Hawthorne, K. L. and Fisher, F. G.
Progress in Railway Mechanical Engineering (1979-1980 Report of Survey Committee)—Cars and Equipment. 80-WA/RT-11.
Hay, E. and Jackson, L. D. A.
Rubber Lined Pipelines—An Overview. 80-WA/MH-8.
Hayden, O. and Taylor, P. A.
Helically Coiled Steam Generators. 80-C2/NE-30.
Head, C. D.
See **Jones, D. C.**
Healey, A. J. and Flores, A.
Analysis of the Horizontal to Vertical Orientation of Deep Water Risers. 80-Pet-67.
Hedman, P. O.
See **Skinner, F. D.**
Heggie, W. S. and Sandri, R.
A Diesel-Powered Hydro-Pneumatic System for the Automobile. 80-DGP-19.
Heliot, J., Labbens, R. and Pellissier-Tanon, A.
Application of the Boundary Integral Equation Method to Three Dimensional Crack Problems. 80-C2/PVP-119.
Heller, R. A.
See **Con, V. N.**
Henderson, R. E.
See **Mellor, A. M.**
Hendrickson, C., Kufert, D. and Oppenheim, I.
Water System Network Analysis under Seismic Hazard. 80-C2/PVP-62.
Hendrie, S. D.
See **Raghuraman, P.**
Hendriks, R. and Levine, P.
Cycle Optimization for a 10,000 SHP High Efficiency Gas Turbine System. 80-GT-157.
Henninger, W.
See **Chang, D. J.**
Henze, R. H. and Humphrey, J. A. C.
Enhanced Heat Conduction in Phase-Change Thermal Energy Storage Devices. 80-WA/HT-45.
Herrmann, R.
PA.4-200 Engines with Variable Geometry Precombustion Chamber and Two Stage Turbocharging System. 80-DGP-22.
Herzog, P.
The Effect of Combustion Pressure on the Injection Characteristics of Diesel Fuel Injection Pumps. 80-DGP-30.
Hesketh, H. E.
See **Cross, F. L.**
Hewitt, J. C.
See **Onur, N.**
Hickox, C. E. and Gartling, D. K.
A Numerical Study of Natural Convection in a Horizontal Porous Layer Subjected to an End-to-End Temperature Difference. 80-WA/HT-39.
Hilbert, W. F., Bruno, A. and McNamara, J. E.
Environmental Control System Concept Study for a Navy V/STOL Aircraft. 80-ENAs-47.
Hill, J. M.
See **Pavri, R. E.**
Hinton, T. E.
A Method for Evaluating the Relative Worth of Research and Development Tasks to Prioritize Them. 80-WA/Mgt-4.
Hiroo, Y., Ainoura, M. and Yonekura, M.
A Research on Generating Hobbing of Internal Gears. 80-C2/DET-57.
Hirose, S. and Umetani, Y.
The Basic Motion Regulation System for a Quadruped Walking Vehicle. 80-DET-34.
Hirt, C. W. and Nichols, B. D.
A Computational Method for Free Surface Hydrodynamics. 80-C2/PVP-144.
Hirt, M.
German and American Quality System of Spur, Helical and Bevel Gears; Influence of Gear Quality on Costs and Load Capacity. 80-C2/DET-18.
Hlebanja, J. and Vizintin, J.
An Investigation and Testing of a Concavo-Convex Profile for the Basic Profile of a Cylindrical Worm. 80-C2/DET-14.
Hoch, J. and Jiji, L. M.
Two-Dimensional Turbulent Offset Jet-Boundary Interaction. 80-WA/FE-12.
Hochreiter, L. E.
See **Howard, R. C.**
Hochreiter, L. E.
See **Wong, S.**
Hochreiter, L. E.
See **Yao, S. C.**
Hodgeman, H. H. and Upp, E. L.
Predicting Flow Characteristics for Energy Conservation Through the Use of Modeling. 80-Pet-44.
Hoff, R.
See **Pick, R. J.**
Hoffman, G. S.
See **Brennen, C. E.**
Hoffman, M. A. and Mokhtarani, A.
Heat Flux Limitations for Water-Cooled Extraction Grids in Ion Accelerators. 80-HT-50.
Hogan, J. S.
See **Cess, R. D.**
Hold, G. E.
See **Thomas, F. J.**
Holladay, T. E.
See **Grant, J. R.**
Holladay, T. E.
See **Lewis, G. D.**
Hollands, K. G. T.
See **Elsherbiny, S. M.**
Holman, G. S. and Lu, S. C.
Effects of Torus Wall Flexibility on Forces in the Mark I BWR Pressure Suppression System Under SRV T-Quencher Loading. 80-C2/PVP-145.
Holman, G. S., McCauley, E. W. and Lu, S. C.
Three-Dimensional Linear Analysis of Fluid-Structure Interaction Effects in the Mark I BWR Pressure Suppression Torus. 80-C2/PVP-146.
Holt, J. S. and Parsons, B.
Finite Element Stress Analysis in the Medium Speed Diesel Engine. 80-DGP-10.
Honea, F. I., Rindt, D. K., Middleton, R. and Rothe, D.
The Use of Additives to Reduce Ash Fouling Problems in Lignite-Fired Boilers. 80-JPGC/Fu-3.
Hopkins, D. C. and Chiang, C. W.
Forced Ventilation Envelope House: Computer Simulations. 80-WA/Sol-5.
Hopkins, D. C.
See **Chiang, C. W.**
Hopkins, T.
Applying the MC14500B One-Bit Processor to Your Design. 80-DE-9.
Horne, R. N.
The Benefits of a Nondeterministic Approach in the Numerical Analysis of Nonlinear Convection Problems. 80-HT-85.
Horner, M. W., Caruvana, A., Cohn, A. and Smith, D. P.
Near Term Application of Water Cooling. 80-GT-159.
Horowitz, A.
Evaluation of Novel and Powerful Continuously Variable V-Band Transmissions in Comparison with Current Variable and Fixed Drives. 80-C2/DET-121.
Horowitz, R. and Tomizuka, M.
An Adaptive Control Scheme for Mechanical Manipulators—Compensation of Nonlinearity and Decoupling Control. 80-WA/DSC-6.
Horton, T. L. O.
See **Kuo, S. C.**
Hossne, A. J., Soni, A. H. and Harvey, J. W.
Kineto-Elastodynamic Analysis of Mechanisms by Finite Element Formulations. 80-DET-103.
Hotchkiss, G. B., Burmeister, L. C. and Bishop, K. A.
Solar Collector Parameter Identification from Unsteady Data by a Discrete-Gradient Optimization Algorithm. 80-C2/Sol-21.
Houjoh, H.
See **Umezawa, K.**
Houser, D. R.
See **Gilbert, K. T.**

Housner, G. W. and Haroun, M. A.
Earthquake Response of Deformable Liquid Storage Tanks. 80-C2/PVP-79.
Hovingh, J.
Heat Transfer in Inertial Confinement Fusion Reactor Systems. 80-HT-63.
Howard, R. C., Hochreiter, L. E. and McGuire, M. F.
U-Tube PWR Steam Generator Heat Transfer During a Large Loss of Coolant Accident Transient. 80-WA/HT-61.
Howe, B. M., Chambers, A. J., Klotz, S. P., Cheung, T. K. and Street, R. L.
Comparison of Profiles and Fluxes of Heat and Momentum Above and Below an Air-Water Interface. 80-WA/HT-68.
Howe, W.
See **Tang, J. T.**
Howell, H. R. and Stalmach, D. D.
Space Radiator Trade Studies for the 25 kW Power System. 80-ENAs-27.
Howell, J. R.
See **Peng, P.**
Howell, R. C.
Gentle Handling Methods for Fragile Particulate Bulk. 80-WA/MH-1.
Hoyashita, S.
See **Ishibashi, A.**
Hsu, C. S. and Mohler, R. R.
On the Inverse of a Special Class of Bilinear Systems. 80-WA/DSC-13.
Hsu, S. T.
See **Mahoney, J. B.**
Hu, C. K. and Philips, J. W.
Pulse Propagation in Fluid-Filled Elastic Curved Tubes. 80-C2/PVP-126.
Huang, H., Halperson, S. and Curtis, D.
Effectiveness of Fluid Finite Elements in Transient Analyses of Fluid-Coupled Elastic Shell Systems. 80-C2/PVP-135.
Huang, N. C. and Pattillo, P. D.
Collapse of Oil Well Casing. 80-C2/PVP-89.
Hubbard, J. K. and Austin, C.
Development and Field Experience of a New 29000 HP Gas Turbine. 80-GT-152.
Huber, P. W., Kalumuck, K. M. and Sonin, A. A.
Fluid-Structure Interactions in Pressure Suppression Pools: A Perturbation Analysis of Small-Scale Experiments. 80-C2/PVP-123.
Hudgins, E. H.
See **Reid, R. L.**
Hudson, C. M.
Engineering Education Needs as Seen for Agricultural and Construction Equipment. 80-C2/DE-1.
Hudson, S. L.
Design Aspects and Optimization of Intermediate Temperature Solar Industrial Process Heat Systems. 80-C2/Sol-18.
Huey, C. O.
See **Dixon, M. W.**
Hulme, B. G.
Development of Offshore Gas Turbine Packages for Power Generation and Mechanical Drive. 80-GT-84.
Humphrey, J. A. C.
See **Henze, R. H.**
Hundal, M. S.
Design of Vibratory Systems with Aid of Dimensional Analysis. 80-DE-5.
Hunter, J. A.
Dry Cooling Tower Operating Experience in the Loft Reactor. 80-C2/Pwr-7.
Huston, L. and Kramer, S.
Complex Number Synthesis of Four-Bar Path Generating Mechanisms Adjustable for Multiple Tangential Circular Arcs. 80-DET-77.
Hunui, S.
See **Belie, R. G.**
Hupp, J. D.
See **Van Der Mersch, P. L.**
Hutchins, W. H. and Grabowski, W. V.
High Effectiveness Recuperator for Waste Heat Recovery Applications. 80-WA/HT-15.
Hutchinson, R. N.
See **Imwalle, D. E.**
Hutton, J. R.
See **Miller, D. J.**
Huzayyin, A. S.
See **Wassel, F. M.**
Hwalek, J. J.
See **Yilmaz, S.**

I

Ibrahim, Z. N.
Evaluation of Piping Restraint Assembly Variations. 80-C2/PVP-5.
Imwalle, D. E., Labath, O. A. and Hutchinson, R. N.
A Review of Recent Gear Rating Developments ISO/AGMA Comparison Study. 80-C2/DET-25.
Inch, W. W. R. and Shill, R. H.
Thermal-Hydraulics of Nuclear Steam Generators: Analysis and Parameter Study. 80-C2/NE-7.
Ingebo, R. D.
Atomizing Characteristics of Swirl Can Combustor Modules with Swirl Blast Fuel Injectors. 80-GT-30.
Inoue, K.
See **Tobe, T.**
Ionescu, T. and Manolescu, N. I.
System Analysis and Structural Criteria Concerning Diesel Locomotives. 80-DET-105.
Ishibashi, A. and Hoyashita, S.
Appreciable Increase in Pitting Limit of a Through Hardened Steel. 80-C2/DET-28.
Ishida, K. and Matsuda, T.
Effect of Tooth Surface Roughness on Gear Noise and Gear Noise Transmitting Path. 80-C2/DET-70.
Ishida, K. and Matsuda, T.
Study on Pitch Circle Impulse Noise of Gear by Simulated Gear Tooth Contact. 80-C2/DET-69.
Issler, L.
See **Grillenberger, T.**
Izor, R. C.
See **Kassawara, R. P.**

J

Jackson, L. D. A.
See **Hay, E.**
Jacobs, H. R.
Condensation on Immiscible Falling Films. 80-HT-110.
Jacobs, H. R., Kodres, C. A., Sedgwick, L. M., Udell, K. S. and Murphy, R. E.
Heat Flux to a Buried Pipeline Considering a Change of Phase. 80-HT-11.
Jacobson, W.
Pneumatic Unloading of Ships and Barges. 80-WA/MH-10.
Jaegers, H.
See **Foerster, S.**
Jagow, R. B.
The Development of a Space Shuttle Research Animal Holding Facility. 80-ENAs-39.
Jaini, C. K. C. and Rao, A. C.
Synthesis of Two-Degree of Freedom Mechanism with Pulse Loading. 80-DET-82.
Jakuba, S.
A New Concept in Engine Testing Laboratories: The Jacobs Manufacturing Company. 80-DGP-35.
Jaliwala, S. A., Gregory, J. C. and Beeson, D. E.
An Application of Control Theory to Optimize Automotive Cam Design. 80-DGP-13.
Jaluria, Y. and Gupta, S. K.
A Numerical Study of Mixed Convection Flow in Enclosures. 80-HT-80.
Jamalallail, H. R.
See **Temple, T. W.**
James, E. H.
See **Lucas, G. G.**
James, R.
See **Morrison, F. R.**
Janisch, H.
See **Affenzeller, J.**
Jaquay, K. R. and Dalcher, A. W.
Transient Stresses in Mixing Components Due to Spacially Varying Thermal Gradients. 80-C2/PVP-93.
Jarvis, J. L. and Palmer, R. S. J.
Probe for Surface Charge Density Measurement on a Moving Transmission Belt. 80-C2/DET-98.
Javedi, S. H.
See **Gollahalli, S. R.**
Jaw, L., Rose, E., Krey, G. and Weber, D.
LNG Cogeneration Power Station. 80-JPGC/Pwr-11.
Jendrzejczyk, J. A.
See **Chen, S. S.**
Jenkins, B. G., Moles, F. D., Desty, D. H., Boden, J. C. and Pratley, G.
The Aerodynamic Modelling of Flares. 80-Pet-86.
Jensen, M. K. and Bergles, A. E.
Boiling Heat Transfer and Critical Heat Flux and Helical Coils. 80-HT-49.
Jermanok, J., Keith, R. E. and Backhaus, E. F.
Operation and Test of a New 37 MW Gas Turbine Package Power Plant. 80-GT-85.
Jessup, T. W.
Gear Blank-Dished Web Analysis. 80-C2/DET-102.
Jiji, L. M.
See **Hoch, J.**
Jimboh, K., Aono, H. and Kawashima, T.
Ferris Wheel Testing—Low Cycle Fatigue Test of Gas Turbine Engine Discs. 80-GT-1.
Johnson, D.
Gas Turbine Information and Control System. 80-GT-120.
Johnson, E. K.
See **Ban, T. E.**
Johnson, I.
See **Lee, S. H. D.**
Johnson, J. E.
See **Carhart, H. W.**
Johnson, L. E.
See **Sherburne, P. A.**
Johnson, R. A.
See **McDonald, J. S.**
Johnson, S. A.
See **Yang, R. J.**
Johnston, R. P. and Ortiz, P.
Future Trends in Subsonic Transport Energy Efficient Turbofan Engines. 80-GT-177.
Jonckheere, R.
See **Fahmy, M. A. K.**
Jones, A. V.
Some Aspects of Fluid-Structure Coupling with the Implicit Continuous Eulerian Hydrodynamics Algorithm. 80-C2/PVP-101.
Jones, D., Shaw, L. and Lof, G. O. G.
Performance of Solar Collectors—An Evaluation of Standard Ratings. 80-WA/Sol-1.
Jones, D., Guenther, D. A. and Chiou, W.
Power Extraction from Deep Ocean Waves Employing a Novel Wave Energy Device. 80-Pet-29.
Jones, D. C., Head, C. D. and Crupi, J.
Jet Engine Computer-Aided Tube Design System. 80-GT-36.
Jones, M. R.
See **Kress, L. A.**
Jones, O. C.
See **Greene, G. A.**
Jones, R. T.
See **Firmin, A.**
Jones, T. V. and Russell, C. M. B.
Efficiency of Rectangular Fins. 80-HT-121.

Jorgensen, R., Gerhart, P. M. and Kroll, J.
A Comparison of Two Alternative Methods for Defining Fan Performance. 80-WA/PTC-1.
Joshi, C. H. and Roche, J. W.
Designing Solar Heating Systems—A Statistical Approach. 80-C2/Sol-23.
Joyner, L. L. and Broadwater, R. P.
Control of a Nuclear Power Plant with Once-Through Steam Generators. 80-WA/DSC-24.
Jur, T. A. and Dobbins, W. B.
Investigation of the Failure of a Large Gearset. 80-WA/DE-15.

K

Kadaba, P. V.
See **Bansal, R. K.**
Kahangwa, B.
See **Parkins, D. W.**
Kalfadelis, C. D., Shaw, H., Folsom, B. A. and Corley, T. L.
Environmental Assessment of Gas Turbine/Steam Turbine Combined Cycles. 80-GT-11.
Kalumuck, K. M.
See **Huber, P. W.**
Kamal, S. A., Chern, J. M. and Pai, D. H.
Applications of One-Dimensional Models in Simplified Inelastic Analyses. 80-C2/NE-17.
Kameda, H.
See **Shinozuka, M.**
Kamm, K. G., Noblat, J. M. and Somers, J. C.
Existing Military Trainer Engine Designed to Achieve Low Maintenance Cost. 80-GT-108.
Kammerud, R.
See **Bauman, F.**
Kammerzell, L. L. and Read, J. W.
HTGR-GT Systems Optimization Studies. 80-WA/GT-3.
Kamo, R., Woods, M., Yamada, T. and Mori, M.
Thermal Barrier Coating for Diesel Engine Piston. 80-DGP-14.
Kandl, M. G. and Groghan, D. A.
U.S. Navy, LM2500 Gas Turbine Condition Monitoring Development Experience. 80-GT-158.
Kanegae, H.
See **Fujikawa, Y.**
Kanesaka, H.
New Starting Aid for Low Compression Ratio Diesel Engines. 80-DGP-8.
Kannemans, H.
Radial Pump Impeller Measurements Using a Laser Doppler Velocimeter. 80-GT-94.
Kanninen, M. F.
See **Popelar, C. H.**
Kanu, E. P.
See **Beggs, H. D.**
Kapoor, S. G.
See **Shuaib, A. N.**
Kapp, J. A.
Stress Analysis of OD Notched Thick-Walled Cylinders Subjected to Internal Pressure and Thermal Loads. 80-C2/PVP-6.
Karaki, S.
See **Pratt, R.**
Karam, R. D.
See **Eby, R. J.**
Karamchetty, S.D.S.R.
Geometrical Characteristics of the Combustion Chamber in a Wankel Engine. 80-DGP-17.
Karamchetty, S.D.S.R.
An Optimization Technique for Cogeneration System Simulation. 80-Pet-26.
Karanjia, D. J. and Saravanamuttoo, H. I. H.
A Cost Effective Engine Health Monitoring System for On-Board Use on Hovercraft. 80-GT-185.
Karim, G. A.
See **Hanafi, A.**
Karlekar, B. V.
See **Desmond, R. M.**
Karnopp, D.
See **Azarbaijani, S.**
Kassawara, R. P., Austin, S. C. and Izor, R. C.
The Effect of Reactor Coolant System Rupture Motion on Tributary Piping and Attached Equipment. 80-C2/PVP-24.
Katz, B.
See **Marr, A. H. C.**
Katzenmeier, G.
See **Grillenberger, T.**
Kawashima, T.
See **Jimboh, K.**
Kazarian, L. E.
The Classification of Spinal Column Deformities Resulting from Aircraft Ejection Forces. 80-ENAs-44.
Kearsey, R. P.
See **Burns, K. H.**
Keith, R. E.
See **Jermanok, J.**
Kelley, J. K., Moorhouse, E. W., Kelley, R. D. and Tolot, B. L.
Use of Freeze Conditioning Agents and a Thawing Product on Coal. 80-JPGC/Fu-5.
Kelley, J. M.
See **Werne, R. W.**
Kelley, R. D.
See **Kelley, J. K.**
Kemper, Y.
See **Elu, P.**
Kennedy, M. J., Sersen, S. J. and Rossi, S. M.
Comparison of Liquid Solar Thermal Storage Subsystems in the National Solar Data Network. 80-WA/Sol-36.
Kennedy, W. C., Scarton, H. A. and McDonald, J. F.
Experimental Investigation into the Physics of Arc-Air Metal Gouging Noise Generation. 80-WA/NC-12.
Kennedy, W. C.
See **Scarton, H. A.**
Kercher, D. M.
See **Sundell, R. E.**
Kestin, J.
See **DiPippo, R.**
Kettleborough, C. F.
Solar Assisted Desiccant Dehumidification and Cooling with an Indirect Evaporative Cooler. 80-WA/Sol-29.
Kettleborough, C. F.
See **Barker, J. M.**
Keung, C. S. and Domoto, G. A.
The Use of Sources and Sinks in Solving Two-Dimensional Heat Conduction Problems with Change of Phase in Arbitrary Domains. 80-HT-7.
Khader, M. S.
Heat Conduction with Temperature Dependent Thermal Conductivity. 80-HT-4.
Khalifa, H. E.
See **DiPippo, R.**
Khan, R. A.
See **Kulkarni, S. V.**
Khatib-Rahbar, M.
See **Agrawal, A. K.**
Khoo, P. S. H.
See **Baker, J. E.**
Kienholz, D. A.
See **Citerley, R. L.**
Kiesel, B.
See **Pippin, R. J.**
Kimstra, K.
See **Wesselo, J. H.**
King, G. G.
Geothermal Design of Buried Pipelines. 80-Pet-15.
King, J. H.
See **McDonald, C. F.**
Kingcombe, R. C. and Dunning, S. W.
Design Study for a Fuel Efficient Turbofan Engine. 80-GT-141.
Kingsland, J. M.
Marine Gas Turbines in the Royal Navy 1978-1979. 80-GT-103.
Kinzel, G. L.
Reduction of Instrumented Linkage Data for Simple Anatomical Joint Models. 80-DET-86.
Kirchner, W. L.
See **Dallman, J. C.**
Kiremidjian, A. S.
Reliability of the California State Water Project. 80-C2/PVP-63.
Kirik, M. J. and Gradle, R. J.
A Model for Check Valve/Feedwater System Waterhammer Analysis. 80-C2/PVP-27.
Kirkpatrick, J. R.
See **Giles, G. E.**
Kissinger, L. D.
See **Davis, S. H.**
Kistler, B. L.
See **Awaji, H.**
Klein, D. E.
See **Pope, R. B.**
Klemm, V. P.
See **Reid, R. E.**
Klepper, O. H.
Economics of Selected Fuels for New Industrial Steam Capacity. 80-IPC/Pwr-5.
Klett, D. E.
See **Goswami, T. K.**
Klopack, T.
See **Sandberg, C.**
Klotz, S. P.
See **Howe, B. M.**
Knaap, M. H., Ratzel, W. and Van Westenbrugge, J. K.
Steam Generator Design and Experience in the SNR-Project. 80-C2/NE-31.
Knapp, P.
See **Bammert, K.**
Kobayashi, A., Suzuki, T. and Nakajima, M.
Combustion Analysis of the Vehicular Diesel Engine in Cold Starting Condition Via High Speed Photography. 80-DGP-7.
Kobayashi, A. S.
See **Awaji, H.**
Kobayashi, A. S.
See **Baum, M. R.**
Kobayashi, A. S.
See **Emery, A. F.**
Kobayashi, A. S.
See **Peri, M.**
Kober, A. E.
Chemically Induced Slagging to Improve Superheat/Reheat Temperature. 80-JPGC/Fu-1.
Koblish, T. R. and Nucci, L. M.
High Temperature Combustor Designed for Operation with Coal Derived Low Btu Gaseous Fuels. 80-GT-187.
Kocamustafaogullari, G.
See **Chan, S. H.**
Kodres, C. A.
See **Jacobs, H. R.**
Koelle, P. S.
Missed Opportunities — Strategy and Procedures for Testing Alarm and Shutdown Devices. 80-Pet-62.
König, W. and Bouzakis, K.
Determination of the Time Course of the Cutting Force Components in Gear Hobbing. 80-C2/DET-75.
Koester, R. D.
See **Nelson, J. E.**
Koike, T.
See **Shinozuka, M.**
Kojima, M. and Faulstich, H. I.
Computer Aided Skiving of Internal Gears. 80-C2/DET-72.
Komiyama, K. and Okazaki, T.
Coal Start Mechanism of Diesel Engines: Computer Simulation and Experiments. 80-DGP-45.
Konuk, I.
Higher Order Approximations in Stress Analysis of Submarine Pipelines. 80-Pet-72.
Kopczynski, M.
See **Kryszewski, J.**

Koroschetz, F.
See **Ehrentraut, O.**
Koslin, M. E.
See **Cason, R. M.**
Kosugi, I.
See **Takahashi, A.**
Kotas, J. F. and Wood, B. D.
Design and Evaluation of a Computer Controlled Solar Collector Simulator. 80-WA/Sol-6.
Kotlin, J. J., Williams, H. A. and Malina, J. A.
A New Medium Speed Two Stroke Cycle Diesel Engine — The General Motors EMD 645EB Series. 80-DGP-32.
Kowalewicz, A.
See **Ekert, K.**
Kowalski, G. J. and Mitchell, J. W.
An Experimental Investigation of the Convective Heat Transfer Mechanisms within a Fur Layer. 80-WA/HT-28.
Kowalski, J.
Five-Speed Transmission Optimal Design Using Analytic-Structural Modelling. 80-C2/DET-3.
Kozak, J.
See **Firla, A. P.**
Kozak, L. and Termuehlen, H.
Conceptual Design of 100 Percent External Turbine Bypass Systems. 80-JPGC/Pwr-19.
Kozluk, M. J.
See **Vijay, D. K.**
Kramer, S.
See **Huston, L.**
Krammer, A.
American Adaptation of German Synthetic Fuel Technology: 1945-1953. 80-Pet-50.
Krapp, R.
See **Bammert, K.**
Kraus, S.
See **Davies, S. M.**
Krause, H. H. and Berry, W. E.
Erosion-Corrosion in the Multisolids Fluidized Bed Combustor Part II: Burning Coal with Limestone in 14 × 25-In. Unit with Integral Boiler. 80-WA/CD-4.
Krause, H. H.
Refuse-Derived Fuels. 80-JPGC-Fu-2.
Krause, W. B. and Peters, A. R.
Heat Transfer from Horizontal Serrated Finned Tubes in an Air-Fluidized Bed of Uniformly-Sized Particles. 80-HT-48.
Krauth, A.
See **Foerster, S.**
Kreith, F.
Heat Transfer and the Future of Solar Energy Utilization. 80-WA/Sol-41.
Krempl, E.
See **Zirin, R. M.**
Kress, L. A., Taylor, W. M., Jones, M. R. and Jones, M. R.
A Review of Development Problems Associated with High Pressure Vessels of Irregular Form. 80-C2/PVP-26.
Kretschmer, D.
See **Odgers, J.**
Krey, G.
See **Jaw, L.**
Krieg, R., Goller, B. and Halfinger, G.
A Boundary Integral Method for Description of Fluid Interaction with Complex Three-Dimensional Structures. 80-C2/PVP-113.
Krishnamurthy, L.
See **Roquemore, W. M.**
Krishnamurthy, R. and Venkatesh, V. C.
On Pitting Characteristics of Gears. 80-C2/DET-26.
Krivokapich, G. A., Fenton, D. L., Abernathy, G. H. and Otts, J. V.
Operational Characterization of the Solar-Thermal Power System Near Willard, New Mexico. 80-WA/Sol-39.
Kroenke, W. C. and McKinley, D. A.
Experiences in Comparing Elastic-Plastic Solutions with Nozzle Test Results. 80-C2/PVP-10.
Kroll, J.
See **Jorgensen, R.**
Kryszewski, J., Kopczyński, M. and Chudziński, J.
Electronic Control for Diesel Engine. 80-DGP-20.
Kryter, R. C.
See **Stoneking, J. E.**
Kuehn, L. A. and Zumrick, J.
Assessment of Thermal Protection Afforded by Hot Water Diving Suits. 80-WA/OCE-4.
Kufert, D.
See **Hendrickson, C.**
Kulak, R. F.
A Three-Dimensional Quasi-Eulerian Approach for Fluid-Structure Interaction Calculations. 80-C2/PVP-95.
Kulkarni, S. V. and Khan, R. A.
Synthesis of Four-bar Linkage for Position, Velocity and Acceleration Coordination by Geometric Programming. 80-DET-80.
Kumar, A. and Waldron, K. J.
The Dextrous Workspace. 80-DET-108.
Kumar, A. and Shankar, P. N.
A Potential Flow Model for Lifting Separated Flows. 80-FE-4.
Kumar, R. A., Powe, R. E. and Steele, W. G.
Thermal Performance Analysis of an MHD Simulation Test Facility. 80-WA/HT-13.
Kunstaft, E. and White, E.
Energy Management in a Closed-Cycle High-Energy Laser. 80-HT-130.
Kuo, S. C., Horton, T. L. O. and Shu, H. T.
The Prospects for Solar-Powered Closed-Cycle Gas Turbines. 80-GT-26.
Kurisu, T.
See **Nakahara, T.**
Kutasov, I. M. and Bates, T. R.
Arctic Drilling Technology in the Soviet Union. 80-Pet-73.
Kuzay, T. M.
Effective Thermal Conductivity of Porous Solid-Gas Mixtures. 80-WA/HT-63.
Kwong, K. C.
See **Suchsland, K. E.**
Kyrtatos, N. and Watson, N.
An Aerodynamic Method for Control and Range Improvement of Rotary Compressors. 80-GT-31.

L

Labath, O. A.
See **Imwalle, D. E.**
Labbens, R.
See **Heliot, J.**
LaBoube, R. A. and McCabe, S. L.
Design of Circular Ductwork for Nuclear Applications. 80-C2/PVP-32.
Labowsky, M.
Burning Rates of Linear Fuel Droplet Arrays. 80-WA/HT-34.
Lace, D. C., Nolte, F. S. and Wainwright, R. M.
Boiler Size Selection for Industrial Plants with Multiple Boilers. 80-IPC/Pwr-1.
Lacey, J. A.
See **Scarton, H. A.**
Laga, H. J.
See **Cross, F. L.**
Lal, K. M. and Le May, I.
The Effect of Overloads on Fatigue Crack Propagation in Structural Components. 80-C2/PVP-9.
Lam, E. Y.
See **Darnell, J. R.**
Landis, F.
See **Pratt, T. K.**
Landram, C. S.
See **McMaster, W. H.**
Lang, V.
See **Fechner, G.**
Langfeldt, M. K.
Economic Considerations of Variable Speed Drives. 80-Pet-81.
Lapalikar, S. R. and Rao, A. C.
Synthesis of Four-Bar Mechanism with Correlation Concept. 80-DET-81.
Lapple, W. C.
See **Modrak, T. M.**
Larkin, B.
Pressure Drops and Heat Transfer in a Double Helix Heat Exchanger. 80-WA/HT-38.
Larsen, J. D.
Automated Storage/Retrieval Systems: A State-of-the-Art Update. 80-WA/MH-4.
Larson, J. W.
Survey of Integrated Gasification Combined Cycle Power Plant Performance Estimates. 80-GT-113.
LaRue, A. D.
Reducing Auxiliary Fuel Consumption in Pulverized-Coal-Fired Boilers. 80-WA/Fu-3.
Lauriat, G.
Numerical Study of Natural Convection in a Narrow Vertical Cavity: An Examination of High-Order Accurate Schemes. 80-HT-90.
Lauriat, T. B.
Gas Turbine Ferries—An Update. 80-GT-46.
Lavan, Z.
See **Mei, V.**
Law, C. K.
See **Miyasaka, K.**
Law, E. H.
See **Fries, R. H.**
Layton, R. P. and Mints, W. H.
Data Acquisition System for Thermal Stress Studies. 80-WA/OCE-14.
Lazgin, F. S.
See **Sakhuja, R. K.**
Lazzeri, L., Scala, M. and Agrone, M.
PAULA: A 3D Code for the Analysis of Nonlinear Pipes. 80-C2/PVP-127.
Lea, J. F., Bozatli, A. N. and Gilbrech, D. A.
Melting with a Heated Plate Under Contact Pressure—Variable Property Solution. 80-WA/HT-7.
Leban, M. I.
See **Budininkas, P.**
Lebeck, A. O.
Hydrodynamic Lubrication in Wavy Contacting Face Seals—A Two Dimensional Model. 80-C2/Lub-10.
Lee, C. C.
See **Winn, L. W.**
Lee, E. I. and Semas, V.
Numerical Study of Heat Transfer in Rectangular Air Enclosures of Aspect Ratio Less Than One. 80-WA/HT-43.
Lee, J. C.
See **Campbell, J.**
Lee, L. H. N., Ariman, T. and Chen, C. C.
On Buckling of Buried Pipelines by Seismic Excitation. 80-C2/PVP-75.
Lee, L. H. N.
See **Chen, C. C.**
Lee, L. H. N.
See **Funk, G. E.**
Lee, L. S. S. and Tang, J. H. K.
Stability Analysis of Rotor Lifting Arrangement. 80-WA/DE-10.
Lee, M.-Z.
Seismic Qualification of a Pipe Span Carrying a Valve. 80-C2/PVP-82.
Lee, R.M.
See **Chen, C. H.**
Lee, S. H. D., Swift, W. M. and Johnson, I.
Regeneration of Activated Bauxite Used as a Granular Sorbent for Removing Gaseous Alkali Metal Compounds from Hot Flue Gas. 80-GT-165.
Lee, S. L., Srinivasan, J. and Cho, S . K.
LDA Measurement of Droplet Behavior Across Tie Plate During Dispersed Flow Portion of LOCA Reflood. 80-WA/NE-4.
Lee, S. Y.
See **DeCorso, S. M.**
Lee, W. H. and Roemer, R. E.
Design Considerations for Application of Metallic Honeycomb as an Energy Absorber. 80-C2/PVP-57.
Leech, W. J.
See **Yao, S. C.**
Lefebvre, A. H.
See **El-Shanawany, M. S.**

Lefler, J.
See **Chang, D. J.**
LeGette, J. A.
Fit-Up Control Requirements for Power Piping Systems. 80-C2/PVP-58.
Lehman, S. J., Giramonti, A. J. and Meyer, R. H.
Coal Gasification/Repowering—A Means of Increasing Plant Capacity While Reducing Oil Consumption. 80-GT-161.
Lehman, S. J.
A Performance Comparison of Coal Gasification Combined Cycles with Pressurized Boiler/Combustors or Heat Recovery Steam Generators. 80-JPGC/GT-2.
Lehr, W. J.
See **Cekirge, H. M.**
Leibowitz, L. P., Hanseth, E. J. and Peelgren, M. L.
High Temperature Solar Thermal Technology. 80-WA/Sol-20.
Leibowitz, L. P.
See **Hanseth, E. J.**
Le May, I.
See **Lai, K. M.**
Leon, A.
See **Moskowitz, S.**
Leonard, P. A.
See **Melior, A. M.**
Lepor, M.
Noise Suppressors for Jet Engine Testing. 80-ENAs-28.
Leppink, G. J.
See **Van Campen, D. H.**
Lescoe, J. D.
See **Ying, S. P.**
Lessard, R. D. and Giramonti, A. J.
Coal-Fired Fluid Bed Combustion-Augmented Compressed Air Energy Storage Power Plants: A Technical and Economic Assessment. 80-JPGC/GT-1.
Lessard, R. D., Giramonti, A. J. and Merrick, D.
Preliminary Evaluation of Coal-Fired Fluid Bed Combustion-Augmented Compressed Air Energy Storage Power Plants. 80-GT-160.
Lettieri, V.
See **Hall, R. E.**
Levin, R. L.
The Effect of Solute Polarization on the Freezing and Thawing of Aqueous Solutions. 80-WA/HT-21.
Levine, P.
See **Hendriks, R.**
Lewellen, M. W. and Blanscet, D. I.
Consolidation and Automation of the Conroe Field Facilities Following Unitization. 80-Pet-16.
Lewis, G. D. and Holladay, T. E.
Design of a Successful Low Emissions Burner. 80-GT-12.
Lewis, J. T. and Woods, J. L.
Steam Generator Nozzle Dams for Primary Head Activities. 80-C2/NE-11.
Li, P.
See **Chen, C. J.**
Li, Y. S.
See **Liu, C. K.**
Liburdi, J. and Stephens, J. O.
Experience in Extending the Life of Gas Turbine Blades. 80-GT-181.
Lichti, G. W.
See **Offner, D. H.**
Liddle, S. G.
The Dual Flow Automotive Gas Turbine Engine. 80-GT-183.
Lieb, B. W.
See **Brown, S. J.**
Liechty, R.
Considerations on the Use of Radially-Steered Wheelsets in Railways Trucks. 80-WA/HT-10.
Lignon, D. M.
See **Turner, R. F.**
Liliquist, R. D.
An Infrared Pyrometer for Measuring 700-900 Kelvin Surface Temperatures in a Combustion Gas Background Environment. 80-HT-5.
Lin, C. S.
See **Luh, J. Y. S.**
Lin, C.-W., Loceff, F. and Riggio, M. D.
Development of Torsional Input at the Nuclear Power Plant Foundation. 80-C2/PVP-15.
Lin, J. C.
See **Grush, W. H.**
Lindahl, B. C.
See **Marksberry, C. L.**
Lindhardt, P.
See **Ostergaard, A.**
Linebarger, J. H.
See **Grush, W. H.**
Ling, F. F.
See **Roberts, J. C.**
Lister, E., Niedzwiecki, R. W. and Nichols, L.
Low NO_x Heavy Fuel Combustor Program. 80-GT-69.
Litkouhi, B.
See **Beck, J.V.**
Litvin, F. L. and Gutman, Y. I.
Analysis and Synthesis of a Three-Link Linkage with an Intermediate Higher Kinematic Pair. 80-DET-94.
Liu, C. H.
Flow and Heat Transfer in a Square Duct with Internal Barrier. 80-HT-83.
Liu, C. K., Glassford, A. P. M. and Li, Y. S.
A Thermal Analysis on the Deep Quest Life Support System. 80-ENAs-30.
Liu, F. C. and Sea, R.
At-Sea Evaluation of a Ram Tensioner for Ocean Deployment and Recovery. 80-WA/OCE-5.
Liu, J. K.
High Efficiency Hydroviscous Drives for Mainline Pumps. 80-Pet-80.
Liu, T. M. and Washam, R. M.
Smoke Characteristics of Distillate and Residual Fuel Burning in Gas Turbine Combustors. 80-GT-13.
Lo, E. Y.
See **Brennen, C. E.**
Lobitz, D. W. and Sullivan, W. N.
VAWTDYN—A Numerical Package for the Dynamic Analysis of Vertical Axis Wind Turbines. 80-WA/Sol-18.
Loceff, F.
See **Lin, C. W.**
Löser, H.
Spacelab Thermal System Analysis Approach and First Results of System Verification Testing. 80-ENAs-21.
Loewenthal, S. H.
See **Savage, M.**
Lof, G. O. G.
See **Jones, D.**
Long, R. R.
See **Chern, C.-S.**
Los, C. D. and Sununu, J. H.
On the Major Design Parameters of Two Low Temperature Difference Heat Engines: The Minto and Sununu Wheels. 80-C2/Sol-9.
Loth, R. A.
See **Tatum, C. B.**
Love, J.
See **Baum, M. R.**
Love, W. J.
See **Awaji, H.**
Love, W. J.
See **Emery, A. F.**
Love, W. J.
See **Perl, M.**
Lovegrove, P. C.
See **Robertson, J. M.**
Loveless, W. G.
See **Groening, J. H.**
Loxsom, F.
See **Rudeki, J. E.**
Lu, S. C.
See **Holman, G. S.**
Lucas, G. G., James, E. H. and Anton, R.
Calibration of a Hot Wire Anemometer for Use in "Motored" Engines. 80-DGP-18.
Lucia, P. C.
See **Duncan, P. C.**
Luh, J. Y. S. and Lin, C. S.
Optimum Path Planning for Mechanical Manipulators. 80-WA/DSC-18.
Lukas, H. and Duncan, R.
Operational Problems and Solutions of Gas Turbine Liquid Fuel Systems—A Survey Report. 80-JPGC/GT-3.
Lukas, M. P.
See **Haberman, L. K.**
Lunardini, V. J.
Phase Change Around a Circular Cylinder. 80-WA/HT-5.
Lundin, A., Ohisson, P. and Thorin, L.-E.
Design and Testing of Engine Components for the Nohab F30 Engine. 80-DGP-24.
Lutwen, R. C.
See **DeBoe, H. M.**

M

Ma, B. M.
Pellett-Cladding Interaction of LMFBR Fuel Elements at Unsteady State. 80-C2/NE-26.
MacArthur, J. W.
Transient One-Dimensional Heat Transfer to or from Incompressible Fluids Flowing Through Coils, Tubes or Ducts. 80-HT-109.
McAssey, E. V.
See **Bonakdar, H.**
McBride, D. D.
See **Randall, D. E.**
McCabe, M. E.
See **Overton, R. L.**
McCabe, S. L.
See **LaBoube, R. A.**
McCarthy, J. M. and Roth, B.
Instantaneous Properties of Trajectories Generated by Planar, Spherical, and Spatial Right Body Motions. 80-DET-19.
McCarthy, K. L.
See **Zetlmeisl, M. J.**
McCauley, E. W.
See **Holman, G. S.**
McCord, R. M.
Engine Condition Monitoring Using Fibreoptic Probes. 80-GT-118.
McCoy, A. W.
Gas Turbine Propulsion Systems for Small Naval Ships. 80-GT-110.
McDonald, C. F., Vrable, D. L., King, J. H., Spring, A. H. and Van Hagan, T. H.
Heat Exchanger Design Considerations for High-Temperature Gas-Cooled Reactor (HTGR) Plants. 80-HT-62.
McDonald, J. F.
See **Kennedy, W. C.**
McDonald, J. S., Storrs, C. L., Johnson, R. A. and Stoker, W. P.
CDS Reactor Assembly and Refueling Systems. 80-C2/NE-10.
McDonough, J. and Catton, I.
A Physical Mechanism for the Increase of Cell Wavelength in Rayleigh-Bénard Convection. 80-HT-75.
McDonough, J. M. and Catton, I.
A Mixed Finite Difference—Galerkin Procedure for Two-Dimensional Convection in a Square Box. 80-HT-88.
McElroy, M. W.
See **Yang, R. J.**
McGowan, T. F. and Walsh, J. L.
An Economic Comparison of Wood and Fossil Fuel Processing Systems. 80-WA/Ener-1.
McGuire, M. F.
See **Howard, R. C.**
Machemehl, J. L.
See **Graham, D. S.**
McIlroy, K.
See **Fricke, H. D.**
Mack, J. C.
See **Binder, S.**

McKinley, D. A.
See **Kroenke, W. C.**
McLandrich, G. T.
See **Chandra, K.**
McLaughlin, T. M. and Miller, N. R.
Techniques for the Evaluation of Loads on the Forearm Prior to Impact in Tennis Strokes. 80-C2/DET-116.
MacLeod, G.
See **Berry, W. E.**
McMaster, W. H., Gong, E. Y., Landram, C. S. and Quinones, D. F.
Fluid Structure Coupling Algorithm. 80-C2/PVP-94.
McMurrin, J.C. and Buchberg, H.
Design Optimization of Sinusoidal Glass Honeycomb for Flat Plate Solar Collectors. 80-C2/Sol-2.
McNamara, J. E.
See **Hilbert, W. F.**
MacNeal, R. H., Citerley, R. and Chargin, M.
A Symmetric Modal Formulation of Fluid-Structure Interaction, Including a Static Approximation to Higher Order Fluid Modes. 80-C2/PVP-116.
Macpherson, P. B.
See **Graham, R. C.**
Macpherson, P.B.
See **Spikes, H. A.**
Macpherson, P. B.
See **Taha, M. M. A.**
Madey, R. and Photinos, P. J.
Adsorption Interference in a Mixture of Trace Contaminants Flowing through Activated Carbon Absorber Beds. 80-ENAs-17.
Madjid, A. H.
Superplants for Power Generation: A Way to Improve Coal Utilization. 80-WA/CD-2.
Madni, I. K.
See **Agrawal, A. K.**
Magelssen, L. S.
See **Scherm, M.**
Magnet, J. L. and Curtil, R.
Modular Pulse Converter Turbocharging Process and Exhaust Valve Facing Temperature. 80-DGP-4.
Mahefkey, E. T.
See **Yimer, B.**
Mahoney, J. B., Ramchandani, M. and Hsu, S. T.
Steady State Vibration in Condensate Piping Due to Pump Operation. 80-C2/PVP-46.
Mahoney, J. B.
See **Chu, A. W.**
Mahr, D.
See **Yu, A. T.**
Maizza, V.
Organic Rankine-Cycle Turbine Power Plant Utilizing Low Temperature Heat Sources. 80-GT-153.
Majette, M.
See **Book, W. J.**
Makay, E. and Diaz-Tous, I. A.
Hydraulic and Dynamic Instabilities in Feed Pumps in Large Fossil and Nuclear Applications in the U. S. A. 80-JPGC/Pwr-21.
Makay, E.
See **Adams, M. L.**
Maki, M.
A Study of Hourglass Worm Gearing of Point Contact. 80-C2/DET-20.
Maki, M.
See **Sakai, T.**
Malanoski, S. B.
See **Chen, H. M.**
Malina, J. A.
See **Kotlin, J. J.**
Maloney, K. L., Benson, R. C. and Diaz-Tous, I. A.
Overview of Major Causes of Pulverized Failures. 80-JPGC/Pwr-5.
Mancuso, R. J.
See **Truong, H. V.**
Mandjikas, B.
See **Brown, A.**
Mangarella, P.
See **Robilliard, G. A.**
Manhardt, P. E.
See **Palusamy, S.**
Manis, S. L.
See **Starley, G. P.**
Mann, D. E.
A User Programmable General Purpose Microprocessor Control System. 80-GT-28.
Manning, G.
See **Fraize, W.**
Manning, G. B.
See **Wolf, J. C.**
Manning, M. P.
See **Garmirian, J. E.**
Manns, B. H.
See **Peppin, R. J.**
Manolescu, N. I.
See **Ionescu, T.**
Marcal, P. V.
See **Rivlin, J. M.**
Marchand, E. O., Singhal, A. K. and Spalding, D. B.
Predictions of Operation Transients for a Steam Generator of a PWR Nuclear Power System. 80-C2/NE-5.
Marchis, V.
Simulation Experiments of Phase-Change Thermal Systems. 80-ENAs-25.
Margolis, D.L.
See **Tawfiq, S. S.**
Marjon, P. L.
See **Feldman, K. T.**
Marksberry, C. L. and Lindahl, B. C.
Industrial AFB-Fired Gas Turbine Systems with Topping Combustors. 80-GT-163.
Marr, A. H-C., Phelps, R. L. and Katz, B.
Loss of Component Cooling Water Capability of a PWE Reactor Coolant Pump. 80-C2/PVP-28.
Marsden, J. E.
See **Ball, J. M.**
Marsh, G. D.
See **Schultz, L. A.**
Martin, H.
Fluid-Bed Heat Exchangers—A New Model for Particle Convective Energy Transfer. 80-HT-60.
Martin, J. R. and Castelli, F. P.
A Comparison of the Second and Third Editions of the ASME Recommended Guide for the Prediction of the Dispersion of Airborne Effluents. 80-WA/APC-3.
Martin, K. F., Davies, R. T. and Rasiah, P. N.
Axial Fatigue Strength of Carbon Fibre Reinforced Bone Cement. 80-C2/DET-128.
Martone, J. A.
See **Gleason, C. C.**
Matson, J. V., Clifford, D. A. and Mouche, R. J.
Advances in the Treatment of Cooling Tower Blowdown. 80-IPC/Pwr-6.
Matsuda, T.
See **Ishida, K.**
Matta, J. V.
The Plant Control System Design for the Clinch River Breeder Reactor Plant. 80-WA/DSC-17.
Maudlin, P. J., Parks, C. V. and Weber, C. F.
Thermal-Hydraulic Differential Sensitivity Theory. 80-WA/HT-56.
Maule, G. R.
See **Yambor, S. P.**
Maxwell, T. T. and Spalding, D. B.
Numerical Modelling of Free Surface Flows. 80-C2/PVP-143.
Mears, J. C. and Nash, J. M.
Performance Evaluation of Solar Energy Systems Using a Modified f-Chart Analysis. 80-C2/Sol-22.
Mehdizadeh, P.
Drill Pipe Inspection by Acoustic Emission Proof Loading Method. 80-Pet-54.
Mehdizadeh, P.
See **Salama, M. M.**
Mehra, V. K.
See **Cremers, C. J.**
Mehta, L. C.
Performance Characteristics of I.C. Engine Connecting Rod Bearings. 80-DGP-46.
Mei, V. and Lavan, Z.
Performance of Cross-Cooled Desiccant Dehumidifiers. 80-WA/Sol-34.
Meier, S. E.
Theoretical Studies of the Response of LWR Pressure Vessel to a Postulated Steam Explosion. 80-C2/PVP-137.
Meissner, C.
See **Brennen, C. E.**
Melick, G. F.
See **Bauer, F. W.**
Mellor, A. M., Leonard, P. A. and Henderson, R. E.
Turbopropulsion Combustion Research Needs. 80-GT-164.
Mellor, A. M.
See **Clark, J. A.**
Merrick, D.
See **Lessard, R. D.**
Messeh, W. A.
See **Saad, N. R.**
Messler, A. A.
See **Shea, M. L.**
Metcalfe, A. G., Rose, F. K. and Gagne, R. A.
Isothermal Roll Forging of Compressor Blades. 80-GT-92.
Meyer, B. R. and de Buhr, A. P.
Super Series Wheel Creep Control System. 80-WA/RT-3.
Meyer, B. R.
See **Modest, M. F.**
Meyer, D. E.
See **Ali, M. W.**
Meyer, R. H.
See **Lehman, S. J.**
Micek, L.
See **Rudzki, J. E.**
Middleton, R.
See **Honea, F. I.**
Midha, A.
See **Badiani, M.**
Mikic, B.
See **Gierszewski, P. J.**
Miles, J. H. and Raftopoulos, D. D.
Pressure Spectra and Cross Spectra at an Area Contraction in a Ducted Combustion System. 80-C2/Aero-9.
Miller, D. J., Beley, J. R. and Hutton, J. R.
Regulatory Considerations in Pipeline Sitting and Permitting. 80-Pet-10.
Miller, N. R. and Ross, D.
The Design of Variable-Ratio Chain Drives for Bicycles and Ergometers—Application to a Maximum Power Bicycle Drive. 80-C2/DET-115.
Miller, N. R.
See **McLaughlin, T. M.**
Miller, R. N. and Smith, R. L.
The Effect of Various Environments on the Fatigue Cracking of High Strength Aluminum Alloys. 80-C2/PVP-11.
Mills, R. G. and Peltier, R. V.
Wood Burning Indirectly Heated Gas Turbine/Cogeneration System for Use in the Pulp and Paper Industry. 80-GT-182.
Miner, E. W.
Numerical Techniques in Heat Transfer and Transportable-Vectorizable Fortran Computer Programming. 80-HT-87.
Mints, W. H.
See **Layton, R. P.**
Mitchel, B. J.
See **Chan, A. W.**
Mitchell, J. W.
See **Kowalski, G. J.**
Mitchell, J. W.
See **Svard, C. D.**
Miyake, M.
See **Saeki, K.**
Miyasaka, K. and Law, C. K.
Combustion and Agglomeration of Coal-Oil Mixtures in Furnace Environments. 80-HT-124.
Mizutani, Y. and Taki, A.
Mechanisms and Characteristics of Combustion of Water-in-Oil Emulsion Sprays. 80-WA/HT-36.

Modest, M. F., Meyer, B. R. and Azad, F. H.
Combined Convection and Radiation in Tube Flow of an Absorbing, Emitting and Anisotropically Scattering Gas-Particulate Suspension. 80-HT-27.
Modest, M. F.
See **Azad, F. H.**
Modrak, T. M., Morris, T. A., Lapple, W. C. and Aulisio, C. J.
EPRI/B&W Fluidized Bed Combustion. 80-C2/Pwr-3.
Modrey, J. and Younes, Y. K.
A Rapid Determination of Journal Bearing Characteristics Under Combined Loading. 80-DET-62.
Moebus, H. and Schoeckle, S.
Design and Stress Analysis of Nodular Cast Iron Monobloc Pistons for Four Stroke Diesel Engines. 80-DGP-11.
Mogg, K. L. and Phung, D. C.
Design and Evaluation of the Bellefonte Nuclear Plant Main Steam and Feedwater Guard Pipe. 80-C2/PVP-47.
Mohammed, D. P. and Ramaraju, A.
Experimental Studies on the Flow Within the Side Recesses of a Centrifugal Pump Impeller and Casing. 80-WA/FE-7.
Mohaupt, U. H.
See **Forbes, J. W.**
Mohler, R. R.
See **Baheti, R. S.**
Mohler, R. R.
See **Hsu, C. S.**
Moir, R.W. and Taylor, C. E.
New Concept for a High-Power Beam Dump. 80-HT-140.
Mokhtarani, A.
See **Hoffman, M. A.**
Moles, F. D.
See **Jenkins, B. G.**
Monroe, R. C.
Variable Pitch Fan—Theory and Operation. 80-HT-94.
Montgomery, D. W.
See **Anderson, C. A.**
Montgomery, M. E.
Handling, Washing, and Burning Solid Solvent Refined Coal (SRC I) as a Liquid Fuel at High Temperature. 80-JPGC/GT-4.
Moody, F. J.
Additional Waterhammer Considerations in Energy Industries. 80-C2/PVP-154.
Moore, R. L.
See **El-Genk, M. S.**
Moorhouse, E. W.
See **Kelley, J. K.**
Morcos, S. M.
See **Abou-Ellail, M. M. M.**
Morehouse, J. H.
See **Choi, M. K.**
Morello, L.
See **Castelli, P.**
Mori, M.
See **Kamo, R.**
Mori, Y.
Performances of Heat Exchangers on HTGR Application. 80-HT-39.
Morris, T. A.
See **Modrak, T. M.**
Morrison, F. R., Zielinski, J. and James, R.
Effects of Synthetic Industrial Fluids on Ball Bearing Performance. 80-Pet-3.
Morse, A. C.
See **Nesse, A. W.**
Moses, C. A.
See **Naegeli, D. W.**
Moses, G. A.
See **Abdel-Khalik, S. I.**
Moskowitz, S., Weth, G. and Leon, A.
Development of a Coal Fired Pressurized Fluidized Bed for Combined Cycle Power Generation. 80-GT-189.
Moskowitz, S.
See **Raj, R.**
Moskowitz, S.
See **Wolf, J. C.**
Moss, M.
Stored Energy of Gamma-Irradiated 97 Percent Pure Rocksalt. 80-WA/HT-53.
Mote, C. D.
See **Diel, M.**
Mouche, R. J.
See **Matson, J. V.**
Moutsoglou, A., Chen, T. S. and Cheng, K. C.
Thermal Instability of Mixed Convection Flow Over a Horizontal Flat Plate. 80-HT-127.
Moyer, M. C.
See **Schnatzmeyer, M. A.**
Mraz, G. J. and Nisbett, E. G.
Analyses of Two Unrelated High Pressure Vessel Failures. 80-C2/PVP-39.
Mudyiwa, J. M.
See **Brown, A.**
Mujahid, A. and Turner, W. D.
Diffuse Sky Measurements and Determination of Corrected Shadow Band Multiplication Factors. 80-WA/Sol-26.
Mujumdar, A. S.
See **Saad, N. R.**
Muleski, G. E.
See **Aumen, C. P.**
Mulholland, R. J. and Weidner, R. J.
Stochastic Properties of Compartment Models. 80-WA/DSC-37.
Mulik, P. R.
See **Singh, P. P.**
Mullen, R.
See **Belytschko, T.**
Mullins, L. W.
Experience in Reconverting an Industrial Steam Plant to Coal Firing. 80-IPC/Pwr-9.
Munson, D.
See **Chang, D. J.**
Munson, D. P., Willey, E. and Olson, D.
Design and Fabrication Considerations for U Bar Type Pipe Whip Restraints. 80-C2/PVP-53.
Muraszen, A.
The Challenge of Offshore Drilling in the Arctic. 80-Pet-91.
Murdock, J. W.
Calculation of the Theoretical Critical Flow Rate of Saturated Steam. 80-WA/PTC-3.
Murphy, R. E.
See **Jacobs, H. R.**
Murray, R. G.
Performance and Emission Characteristics of a Semi-Adiabatic Engine. 80-DGP-44.
Mussulman, R. L.
See **Stotts, R. E.**
Myklebust, A.
Dynamic Response of an Electric Motor-Linkage System During Startup. 80-DET-54.
Myklebust, A.
See **Sivertsen, O.**

N

Nadano, H.
See **Terauchi, Y.**
Naegeli, D. W. and Moses, C. A.
Effect of Fuel Molecular Structure on Soot Formation in Gas Turbine Engines. 80-GT-62.
Naganathan, G. and Willmert, K. D.
New Finite Elements for Quasi-Static Deformations and Stresses in Mechanisms. 80-WA/DSC-35.
Nagano, K. and Ainoura, M.
A Research on High Speed Hobbing with High Speed Steel Hob. 80-C2/DET-50.
Nakahara, T., Kurisu, T. and Aoki, H.
Externally Pressurized Two Layer Film Bearing—Gas Bearing with Liquid Layer. 80-C2/Lub-41.
Nakajima, M.
See **Kobayashi, A.**
Nakajima, M.
See **Sugano, H.**
Nakajima, T.
See **Nakayama, W.**
Nakanishi, K.
See **Fujikawa, Y.**
Nakanishi, T.
See **Ueno, T.**
Nakayama, W., Daikoku, T. and Nakajima, T.
Modeling of Liquid Suction Mechanism in Porous Surface Boiling. 80-HT-122.
Naraghi, M. H. N.
See **Chung, B. T. F.**
Narita, T.
See **Akazawa, M.**
Nash, J. M.
See **Mears, J. C.**
Nash, W. A.
See **Balendra, T.**
Neaman, R. G. and Anderson, A. W.
Development and Operating Experience of Automatic Pulse-Jet Self-Cleaning Air Filters for Combustion Gas Turbines. 80-GT-83.
Nease, A. W. and Morse, A. C.
A Solution to Pump Ripple in the Space Shuttle Flight Control System. 80-C2/Aero-5.
Neeley, B. B. and Warrix, L.
A Qualification and Verification/Improvement Test Program for HVAC Ducts Used in Nuclear Power Plants. 80-C2/PVP-41.
Neeley, H. H.
See **Whipple, J. C.**
Neilson, H. C., Everstine, G. C. and Wang, Y. F.
Transient Response of a Submerged Fluid-Coupled Double-Walled Shell Structure to a Pressure Pulse. 80-C2/PVP-136.
Nelson, E.
See **Erdman, A.**
Nelson, J. E. and Koester, R. D.
Experience with in Service Water Cleaning of Boiler Fireside Deposits. 80-JPGC/Fu-6.
Nelson, J. W.
See **Case, J. B.**
Nelson, R.A.
Forced Convective Post-CHF Heat Transfer and Quenching. 80-WA/HT-69.
Nelson, R. A.
See **Grush, W. H.**
Nervegna, N.
See **Filippi, F.**
Ng, K. W.
Aerodynamic Noise Generation in Control Valves. 80-WA/NC-8.
Nichols, B. D.
See **Hirt, C. W.**
Nichols, C. C.
Ice Protection of Engine Air Inlet for Cruise Missile Applications. 80-ENAs-2.
Nichols, L.
See **Lister, E.**
Nicolet, W. E., Davy, W. C. and Wilson, J. F.
Galileo Probe Forebody Entry Thermal Protection: Aerothermal Environments and Heat Shielding Requirements. 80-ENAs-24.
Nieberlein, V. A.
Thermal Marking. 80-HT-135.
Niedzwiecki, R. W.
See **Lister, E.**
Niemeyer, W. A.
Operation of the Campbell Soup Facility for Solar Production of Industrial Process Hot Water. 80-C2/Sol-15.
Nijhawan, S. M., Chen, J. C. and Sundaram, R. K.
Parametric Effects on Vapor Nonequilibrium in Post-Dryout Heat Transfer. 80-WA/HT-50.
Nikiforuk, P. N. and Davali, P. W.
A Test for Time Dependence of Multivariate Linear Systems. 80-WA/DSC-30.
Nimmer, R. P.
Parametric Design Analysis of a Hybrid Composite Flywheel Using a Laminated Central Disc and a Filament Wound Outer Ring. 80-DET-97.
Nisbett, E. G.
See **Mraz, G. J.**

Nishikawa, T. and Ono, T.
Synthesis of a Torsional Vibration System of a Diesel Engine. 80-DGP-12.
Nishioka, T. and Atluri, S. N.
Efficient Computational Techniques for the Analysis of Some Problems of Fracture in Pressure Vessels and Piping. 80-C2/PVP-110.
Noblat, J. M.
See **Kamm, K. G.**
Noe, R. R.
See **Yarden, A. L.**
Nohara, M.
See **Terauchi, Y.**
Nollet, A. R.
See **Sherwin, E. T.**
Nolte, F. S.
See **Lace, D. C.**
Nottage, H. B.
Influence of a Propane Standby Fuel System Upon the Costs and Income of a Metal Extrusion and Forging Plant. 80-C2/PEM-1.
Nucci, L. M.
See **Koblish, T. R.**

O

Occhipinti, V. M.
The Application of Computer Technology to Distribution. 80-WA/MH-14.
Odgers, J. and Kretschmer, D.
Considerations of the Use of Vitiated Preheat. 80-GT-61.
Odorizzi, S. and Schrefler, B. A.
A Three-Dimensional Geometrically Nonlinear Analysis of Pipelaying in an Ocean Environment. 80-C2/PVP-125.
Özisik, M. N. and Sutton, W. H.
A Source Function Expansion in Radiative Transfer. 80-HT-32.
Offner, D. H. and Lichti, G. W.
Analysis of the Double-Link Reverser. 80-DET-2.
Oh, S. Y.
See **Orin, D. E.**
Ohlsson, P.
See **Lundin, A.**
Okazaki, T.
See **Komiyama, K.**
Oladiran, O. B.
See **Carson, W. L.**
Olsen, N. H.
See **Purser, P. E.**
Olson, D.
See **Munson, D. P.**
Olson, W. S.
See **Harshvardhan.**
Olver, A.
See **Graham, R. C.**
O'Massey, R. C.
See **Allen, R. R.**
Ono, T.
See **Nishikawa, T.**
Onufer, J. S.
See **Reid, R. L.**
Onur, N. and Hewitt, J. C.
A Study of Wind Effects on Collector Performance. 80-C2/Sol-4.
Openshaw, F.
See **Chan, T.**
Openshaw, F. L. and Chan, T. W.
Operational, Control and Protective System Transient Analyses of the Closed-Cycle GT-HTGR Power Plant. 80-WA/GT-1.
Oppenheim, I.
See **Hendrickson, C.**
Orbeck, F.
See **Wickens, A. J.**
O'Reagan, J. R.
See **Thacker, J. G.**
Orin, D. E. and Oh, S. Y.
Control of Force Distribution in Robotic Mechanisms Containing Closed Kinematic Chains. 80-WA/DSC-32.
O'Rourke, T. D. and Trautmann, C. H.
Buried Pipeline Response to Permanent Earthquake Ground Movements. 80-C2/PVP-78.
Ortega, J. K. E., Bingham, C. E. and Connolly, J. M.
Performance of Storage Walls with Highly Conductive Covering Plates and Connecting Fins. 80-HT-18.
Ortiz, P.
See **Johnston, R. P.**
Osborn, D. B.
Generalized Shading Analysis for Paraboloidal Collector Fields. 80-Pet-33.
Osman, M. O. M., Bahgat, B. M. and Sankar, T.S.
On the Prediction of Journal-Bearing Separation in High Speed Mechanisms with Clearances. 80-WA/DSC-36.
Østergaard, A. and Lindhardt, P.
Future Development of the Slow-Speed Diesel Engine. 80-DGP-39.
Ostfeld, D. M.
The U. K. Legislative Approach to Employer/Employee Invention Relations. 80-Pet-8.
Otts, J. V.
See **Krivokapich, G. A.**
Outcalt, S. I. and Goodwin, C.
A Climatological Model of Surface Modification Effects on the Thermal Regime of the Active Layer at Barrow, Alaska. 80-Pet-20.
Oven, M. J.
See **Sakhuja, R. K.**
Overton, R. L., Cassel, D. E. and McCabe, M. E.
Evaluation of a Proposed Modification to the F-Chart Method to Include Collector Array Air Leakage. 80-WA/Sol-12.
Owen, J. M. and Phadke, U. P.
An Investigation of Ingress for a Simple Shrouded Rotating Disc System with a Radial Outflow of Coolant. 80-GT-49.
Owen, R. G., Sardesai, R. G. and Pulling, D. J.
Transfer Coefficients for Binary Condensation in a Vertical Tube. 80-HT-55.

P

Pai, D. H.
See **Kamal, S. A.**
Pai, N.
Beam Versus Shell Seismic Analysis of Large Diameter Thin Wall LMFBR Piping. 80-C2/PVP-38.
Pai, N.
Seismic Design Feasibility of Pool-Type LMFBR's. 80-C2/PVP-16.
Pai, N.
A Simplified Seismic Design Procedure for Piping Systems. 80-C2/PVP-34.
Palmer, R. S. J.
See **Jarvis, J. L.**
Palusamy, S. and Manhardt, P. E.
Dynamic Behavior of Stainless Steel Pipes under Lateral Impact. 80-C2/PVP-148.
Papez, J. S. and Ails, L.
Considerations in the Application of Variable Frequency Drives for Pipelines. 80-Pet-78.
Parkins, D. W. and Kahangwa, B.
Forces Generated by an Oil Squeeze Film. 80-C2/Lub-39.
Parks, C. V.
See **Maudin, P. J.**
Parsapour, H. B. and Somerscales, E. F. C.
An Application of the Optical Correlation Computer to the Detection of the Malkus Transitions in Free Convection. 80-WA/HT-27.
Parsons, B.
See **Holt, J. S.**
Paschkis, V.
Developing an Informed Public. 80-C2/TS-1.
Patt, R. F. and Reemsnyder, D. C.
CF6 Fan Performance Improvement. 80-GT-178.
Pattillo, P. D.
See **Huang, N. C.**
Paul, D. B.
See **Stultz, J. W.**
Pavri, R. E. and Hill, J. M.
Thermodynamics of Heavy Fuels Operation in Gas Turbine. 80-GT-171.
Paz-y-Miño, C. A.
See **Beggs, H. D.**
Peake, W.
See **Seban, R. A.**
Pearson, J. T.
See **Christopher, D. M.**
Pearson, J. T.
See **Diab, M. R.**
Pearson, J. T.
See **Warinner, D. K.**
Pechersky, M. J. and Babcock, R. V.
Efficient Waste Heat Removal from a UV-Preionized CO_2 Gas Discharge Laser Cavity. 80-HT-131.
Pecorari, C.
See **Gaudio, R.**
Peelgren, M. L.
See **Leibowitz, L. P.**
Pellissier-Tanon, A.
See **Heliot, J.**
Peltier, R. V.
See **Mills, R. G.**
Peng, P. and Howell, J. R.
Analysis and Design of Efficient Absorbers for Low-Temperature Desiccant Air Conditioners. 80-C2/Sol-3.
Peppin, R. J., Manns, B. H. and Kiesel, B.
Can Biorhythm Cycles Predict Accidents? 80-C2/Saf-1.
Peregrine, E. P.
The Angular Accuracy of Gears—A Coherent Design-to-Delivery System. 80-C2/DET-117.
Percival, C. D.
See **Fegan, G. R.**
Percival, W.
See **Pons, R. L.**
Perl, M.
Dynamic Crack Propagation Analysis of the SEN Specimen by a Numerical Method. 80-WA/PVP-2.
Perl, M., Emery, A. F., Kobayashi, A. S. and Love, W. J.
Dynamic Crack Propagation in Very Ductile Materials—The Influence of Inertia. 80-WA/PVP-8.
Perl, M.
See **Awaji, H.**
Perl, M.
See **Emery, A. F.**
Pershing, D. W.
See **Starley, G. P.**
Peters, A. R.
See **Krause, W. B.**
Peters, L. C.
Some Engineering Criteria for Determining Design Defects. 80-WA/DE-16.
Peterson, D., Schwabe, J. E. and Fertis, D.G.
Static and Dynamic Properties of Pipe Whip Specimen Materials. 80-C2/PVP-7.
Peterson, J.
See **Erdman, A.**
Peterson, R. R.
See **Abdel-Khalik, S. I.**
Petrie, G. L. and Hartman, P. J.
Performance Evaluation of Buoy Shapes for Deep Ocean Systems. 80-WA/OCE-12.
Petrie, G. L.
See **Fedele, J. B.**
Pettit, C. L.
Lightweight, High-Horsepower Gearbox Load Testing. 80-C2/DET-54.
Pfrommer, D.
See **Chan, T.**
Phadke, U. P.
See **Owen, J. M.**
Phelps, R. L.
See **Marr, A. H-C.**

Phillips, J. W.
See **Hu, C. K.**
Photinos, P. J.
See **Madey, R.**
Phung, D. C.
See **Mogg, K. L.**
Piccirelli, R. A.
Heat and Mass Transfer Processes During the Pyrolysis of Antrim Oil Shale. 80-HT-123.
Pick, R. J., Hoff, R. and Burns, D. J.
Photoelastic Prediction of Stress Intensity Factors in Thick Walled Cylinders. 80-C2/PVP-20.
Pierre, B.
See **Tilliette, Z. P.**
Pillsbury, P. W.
See **Singh, P. P.**
Pilon, B. A.
See **Rice, J. E.**
Pinnekamp, W.
See **Schmidt, G. R.**
Plumb, O. A.
The Effect of Crossflow on Natural Convection from Vertical Heated Surfaces. 80-HT-71.
Plummer, D. F.
See **Vieth, G. L.**
Pocock, R. E. and Zimmerlin, S. L.
Finally, a No Nonsense O_2 and Combustibles Analyzer. 80-C2/Pwr-2.
Pohlmann, H. J.
See **Foerster, S.**
Pokrandt, G. C.
Factors to be Considered for Proper Selection of Shear Type Overload Protectors. 80-C2/DET-66.
Pollack, M. L.
Fluid-Resonator Response to Hydrodynamic Pressure Oscillations. 80-WA/NC-7.
Polley, G. T., Ralston, T. and Grant, I. D. R.
Forced Crossflow Boiling in an Ideal In-Line Tube Bundle. 80-HT-46.
Polsky, M. P.
Fuel Effectiveness of Cogeneration. 80-JPGC/Pwr-6.
Pomeroy, B. D. and Bond, J. A.
Comparison of Heat Exchanger Designs for Sodium-Cooled Solar Central Receivers. 80-C2/Sol-12.
Pons, R. L.
Conceptual Design and Analysis of a Dish-Rankine Solar Thermal Power System. 80-C2/Sol-10.
Pons, R. L.
The Performance of Solar Thermal Electric Power Systems Employing Small Heat Engines. 80-Pet-25.
Pons, R. L. and Percival, W.
A Stirling Cycle Engine for Use with Solar Thermal-Electric Systems. 80-Pet-32.
Pope, R. B., Yoshimura, H. R., Hamann, J. E. and Klein, D. E.
An Assessment of Accident Thermal Testing and Analysis Procedures for Radioactive Materials Shipping Package. 80-HT-38.
Pope, R. B.
See **Eggers, P. E.**
Popelar, C. H., Gehlen, P. C. and Kanninen, M. F.
Dynamic Crack Propagation in Precracked Cylindrical Vessels Subjected to Shock Loading. 80-C2/PVP-108.
Popov, R. V.
See **Zlokolica, M. Z.**
Porter, L. M.
See **Robin, T. T.**
Portier, J. J.
See **Fraikin, M. P.**
Potter, R. W.
An Assessment of the Development of Geothermal Energy. 80-C2/Pwr-5.
Powe, R.E.
See **Kumar, R. A.**
Powell, J. R.
Design and Operation of Crude Oil Gathering Systems. 80-WRK/Pet-2.
Pratley, G.
See **Jenkins, B. G.**
Pratt, R. and Karaki, S.
Boundary Layer Flow in Trombe Wall Ducts. 80-HT-20.
Pratt, T. K., Landis, F. and Giamei, A. F.
Iterative Nonlinear Thermal Analysis of Directional Solidification Using a Fast Elliptic Solver. 80-HT-34.
Pratt, W. T.
See **Gasser, R. D.**
Price, H. J. and Bravenec, E. V.
A Material Suppliers Quality Assurance System for Auditing Nuclear Vendors. 80-C2/PVP-17.
Provenzale, G. E.
Process Centrifugal Compressor Efficiency Improvement. 80-WA/GT-2.
Pulling, D. J.
See **Owen, R. G.**
Purcell, S. P.
See **Starley, G. P.**
Purser, P. E. and Olsen, N. H.
Preliminary Performance and Cost-Estimation Guidelines for Small Rankine-Cycle Turbogenerators. 80-Pet-24.

Q

Quattrone, P. D.
See **Budininkas, P.**
Quell, P.
See **Foerster, S.**
Quinones, D. F.
See **McMaster, W. H.**
Quraishi, M. S. and Fahidy, T. Z.
A Study of Convective Flow Patterns Via Electrochemical Means. 80-HT-93.

R

Rabadi, N. J., Simon, H. A. and Chow, J. C. F.
Numerical Solution for Fully Developed, Laminar Pulsating Flow in Curved Tubes. 80-HT-81.
Rabas, T. J., Eckels, P. W. and Sabatino, R. A.
The Effect of Fin Density on the Heat Transfer and Pressure Drop Performance of Low-Finned Tube Banks. 80-HT-97.
Rabas, T. J.
Tubeside Exit Condition with Complete Condensation in Multitube Cross-Flow Heat Exchangers. 80-HT-96.
Radcliffe, C. W.
Geometric Analysis of Plane Mechanisms. 80-DET-110.
Radcliffe, C. W.
Matrix Methods in Plate Cam Geometry. 80-DET-111.
Radcliffe, C.W.
Synthesis of Sliders for Plane Rigid Body Guidance. 80-DET-109.
Raftopoulos, D. D.
See **Miles, J. H.**
Raghuraman, P. and Hendrie, S. D.
Analytical Predictions of Liquid and Air Photovoltaic/Thermal Flat-Plate Collector Performance. 80-WA/Sol-3.
Ragland, W. A.
LMFBR Loss of Flow Simulations in the Sodium Loop Safety Facility. 80-C2/NE-22.
Rahoi, D. W. and DeLong, J. F.
Evaluation of INCOCLAD 671/800H Tubing After Nine Years of Reheater Service in a Coal-Fired Utility Boiler. 80-WA/Fu-6.
Raibert, M. H. and Craig, J. J.
Hybrid Position/Force Control of Manipulators. 80-WA/DSC-23.
Raithby, G. D.
See **Elsherbiny, S. M.**
Raj, R. and Moskowitz, S.
Erosion Characteristics of Transpiration Cooled Materials. 80-GT-186.
Rajan, M. P.
See **Hariharan, R.**
Rajaram, S. and Yu, C. P.
Heat Transfer in Developing MHD Channel Flows in an Inclined Magnetic Field. 80-WA/HT-12.
Raju, P. P.
Simplified Analysis of Closure Flanges Under Mechanical and Thermal Loads. 80-C2/Ne-16.
Ralston, T.
See **Polley, G. T.**
Ramalingam, S. and Desai, P. V.
Tool-Chip Contact Length in Orthogonal Machining. 80-WA/Prod-23.
Ramaraju, A.
See **Mohammed, D. P.**
Ramchandani, M.
See **Chu, A. W.**
Ramchandani, M.
See **Mahoney, J. B.**
Randall, D. E., McBride, D. D. and Tate, R. E.
Steady-State Wing Loading on Parabolic Trough Solar Collectors. 80-C2/Sol-20.
Rane, A.
See **Yao, S.**
Rao, A. C.
Synthesis of an Epicyclic Gear Train for Path-Generation. 80-DET-27.
Rao, A. C.
See **Boehar, S. B. L.**
Rao, A. C.
See **Choubey, M.**
Rao, A. C.
See **Jaini, C. K. C.**
Rao, A. C.
See **Lapalliker, S. R.**
Rao, S. R.
See **Hanley, T. O'D.**
Rapagnani, N. L.
See **Belie, R. G.**
Rasiah, P. N.
See **Martin, K. F.**
Rasky, D. J.
See **Yuen, W. W.**
Ratzel, W.
See **Knaap, M. H.**
Rauscher, G.
See **Vormstein, W.**
Rautenberg, M.
See **Bammert, K.**
Ray, A.
Turbine Modeling for Power Plant Controller Design. 80-WA/DSC-11.
Rayan, M. A. and Yang, T. T.
An Investigation of Vane-Island Diffusers at High Swirl. 80-GT-148.
Raymond, G. G.
Vehicular Operations and New Developments in Unit Handling. 80-WA/MH-5.
Read, J. W.
See **Kammerzell, L. L.**
Reaugh, J. E.
See **Wilkins, M. L.**
Reemsnyder, D.C.
See **Patt, R. F.**
Reethof, G.
See **Chow, G. C.**
Reeve, J. L. and Flannery, J. V.
Thermal Design of Fluid Test Cell for Growth of Crystals in Space. 80-ENAs-13.
Reeves, C. M.
See **Roquemore, W. M.**
Reid, R. C.
See **Garmirian, J. E.**
Reid, R. E. and Klemm, V. P.
Operating Experience of the General Electric LM2500 Gas Turbines in Navy Ships — Second Report. 80-GT-145.
Reid, R. L., Hudgins, E. H. and Onufer, J. S.
Frost and Ice Formation in the Air Convection Pile Permafrost Protection Device. 80-Pet-23.
Reid, R. L.
See **Bellmore, C. P.**
Reid, R. L.
See **Evans, A. L.**

Reiff, D. D.
NRC Activities Related to Pump and Valve Operability. 80-C2/PVP-31.
Reinhard, K.
See **Gruber, H.**
Reuter, R. C.
Torque Ripple in a Darrieus, Vertical Axis Wind Turbine. 80-WA/Sol-13.
Rice, J. E. and Pilon, B. A.
Atmospheric Monitoring for Submarine Applications. 80-ENAs-33.
Rice, J. G.
See **Sharma, M. P.**
Rice, W. T.
Conservation of Energy and Raw Materials by Utilization of Gear Pumps in Conjunction with Extruder Processes. 80-Pet-2.
Richardson, D. L. and Audet, N. F.
A Ten-Zone Thermal Manikin for Evaluating Personnel Protective Garments in Cold Air and Water Immersion Environments. 80-WA/OCE-13.
Richardson, F. M.
See **Beatty, K. O.**
Riches, M. R.
The International Energy Agency's Program to Develop a Portable Meteorological Instrument Package for Solar Energy Applications. 80-WA/Sol-27.
Rieder, W. G. and Stanislao, J.
Energy Management with Application on a School Structure. 80-C2/Pem-3.
Riggio, M. D.
See **Lin, C. W.**
Rindt, D. K.
See **Honea, F. I.**
Rinker, T. L.
Regional Facilities for Hazardous Waste Disposal. 80-WA/MH-13.
Rivin, E. I.
Compilation and Compression of Mathematical Model for a Machine Transmission. 80-DET-104.
Rivin, E. I.
Role of Induction Driving Motor in Transmission Dynamics. 80-DET-96.
Rivlin, J. M. and Marcal, P. V.
The Application of Mini Computers to Structural Analysis and Design. 80-C2/PVP-134.
Roberts, A. S.
See **Chaturvedi, K.**
Roberts, J. C. and Ling, F. F.
The Design of a Continuous Fiber Composite Surface Hip Replacement. 80-C2/DET-29.
Roberts, P. B., Duffy, T. E. and Schreiber, H.
Fuel-Flexible Combined Cycles for Utility Power and Cogeneration. 80-GT-101.
Robertson, A. S. and Cady, E. C.
Development and Operational Testing of a Heat Pipe Dry Cooling Tower. 80-JPGC/Pwr-22.
Robertson, J. M. and Lovegrove, P. C.
Boiling Heat Transfer with Freon 11 in Brazed-Aluminum Plate-Fin Heat Exchangers. 80-HT-58.
Robilliard, G. A., Mangarella, P. and Steiner, W. E.
Environmental Considerations in Marine Terminal Design. 80-Pet-9.
Robin, T. T., Talty, T. F. and Porter, L. M.
Utility Experience with an Availability Improvement Program: Status and Current Direction. 80-JPGC/Pwr-18.
Robinson, A. M.
Plant Energy Cost Optimization Program (PECOP) 80-Pet-66.
Roche, J. W.
See **Joshi, C. H.**
Rodgers, L. W.
See **Ban, T. E.**
Rodriguez, J. and España, M.
Control of Bilinear System with an Optimal Aim Strategy. 80-WA/DSC-43.
Roebelen, G. J.
See **Winkler, H. E.**
Roemer, R. E. and East, G. H.
Prediction of Large Deformation Pipe Whip and Barrier Impact: A Simplified Approach. 80-C2/PVP-48.
Roemer, R. E.
See **Lee, W. H.**
Roesset, J. M.
Computer Models for Soil Structure Interaction Analyses. 80-C2/PVP-130.
Rogers, D. C.
See **Brown, R. J.**
Rohm, B. N.
Joint Technology Demonstrator Engine—The Initial Test. 80-GT-47.
Roman, W. J.
Aviation Derivative Gas Turbine/Waste Heat Recovery/Compressor Unit Waterton LPG Processing Plant. 80-Pet-63.
Romanacci, R.
See **Dini, D.**
Roquemore, W. M., Bradley, R. P., Stutrud, J. S., Reeves, C. M. and Krishnamurthy, L.
Preliminary Evaluation of a Combustor for Use in Modeling and Diagnostics Development. 80-GT-93.
Rose, E.
See **Jaw, L.**
Rose, F. K.
See **Metcalfe, A. G.**
Rose, R. S.
See **Caruvana, A.**
Ross, D.
See **Miller, N. R.**
Rossi, S. M.
See **Kennedy, M. J.**
Roth, B.
See **McCarthy, J. M.**
Roth, E. P.
Measurement of the Enthalpy and Specific Heat of a Be_2C-Graphite-UC_2 Reactor Fuel Material to 1980 K. 80-WA/HT-54.
Rothe, D.
See **Honea, F. I.**
Roy, G. D.
Heat Transfer as a Diagnostic Tool in the Development of Direct Coal-Fired MHD Combustors. 80-HT-125.
Roy, G. D. and Crawford, L. W.
On Heat Balance in Coal-Fired MHD Systems, Channel Heat Transfer and Electrode Temperature Distribution. 80-WA/HT-11.
Royce, L.
System Analysis Approach to Energy Conservation in Cooling Tower—Central Chiller Plant Systems. 80-ENAs-3.
Rudek, F. P.
See **Fuller, J. D.**
Rudzki, J. E., Clark, G., Loxsom, F. and Micek, L.
The Solar-Meteorological Research Program for the South-Central U.S. 80-WA/Sol-24.
Rudzki, J. E.
See **Wolff, W. J.**
Russell, C. M. B.
See **Jones, T. V.**
Russell, L. D.
Modeling and Analysis of an All-Fiberglass Flat Plate Solar Collector. 80-WA/Sol-4.
Russell, L. H.
See **Carpenter, H. W.**
Russell, L. M.
See **Gaugler, R.E.**
Russon, V. K. and Chase, K. W.
Computer Aided Design of Disk Cams from Numerical Follower Motion Data. 80-WA/DSC-9.
Rutherford, D. A.
Simplifying the Development of Programs for Digital Engine Controllers. 80-GT-29.
Ryan, C. R.
Slurry Trench Cut-Offs to Half Flow of Oil-Polluted Groundwater. 80-Pet-11.
Rylander, H. G. and Weldon, W. F.
Analysis of Defective Hydrostatic Radial Bearings for FIVE Megajoule Hompolar Generator. 80-WA/DE-14.

S

Saad, N. R., Mujumdar, A. S., Messeh, W. A. and Douglas, W. J. M.
Local Heat Transfer Characteristics for Staggered Arrays of Circular Impinging Jets with Cross-Flow of Spent Air. 80-HT-23.
Saalfeld, F. E.
See **DeCorpo, J. J.**
Saba, M. P.
See **Crabtree, R. E.**
Sabatino, R. A.
See **Rabas, T. J.**
Sabourin, M.
See **Baldur, R.**
Sadeh, W. Z. and Sullivan, P. P.
Turbulence Amplification in Flow About an Airfoil. 80-GT-111.
Saeki, K., Miyake, M., Endo, Y. and Biwa, T.
Development of Mitsui L and V42M Medium Speed Diesel Engine. 80-DGP-21.
St. Clair, C. R.
See **Beck, J. V.**
Sakai, T., Tamura, H. and Maki, M.
On the Hourglass Worm Gearing Generated by a Basic Member with a Conical Tooth Surface. 80-C2/DET-21.
Sakai, T., Maki, M. and Gunbara, H.
A Study of Simple Method of Wheel Cutting of Hourglass Worm Gearing. 80-C2/DET-53.
Sakaki, Y.
See **Fujikawa, Y.**
Sakhuja, R. K., Lazgin, F. S. and Oven, M. J.
Boiling Heat Transfer with Arrays of Impinging Jets. 80-HT-47.
Sakuragi, I. and Ainoura, M.
A Research on High-Speed Hobbing with Carbide Multiple-Thread Hob. 80-C2/DET-56.
Salama, M. M. and Mehdizadeh, P.
Toughness Requirements for Offshore Structural Steels. 80-Pet-71.
Salinas, D.
See **Vatikiotis, C. S.**
Salinas, G. A.
See **Buderer, M. C.**
Salvioni, B.
See **Gandolfo, G.**
Salz, W.
See **Wahl, K. K.**
Samonóv, C.
Computer-Aided Design of Helical Compression Springs: Statically Loaded Springs of Round Wire with Residual Stresses Induced by Presetting Operation. 80-DET-69.
Sánchez, M. N. and García de Jalón, J.
Application of B-Spline Functions to the Motion Specification of Cams. 80-DET-28.
Sandberg, C. and Klopack, T.
A Mechanical Coupler with Performance Superior to a Socket Weld. 80-C2/PVP-37.
Sander, D. M.
See **Turaga, M.**
Sanders, R.
See **Chalmers, H.**
Sandler, B. Z.
Gear Calculation Reliability. 80-C2/DET-9.
Sandor, G. N., Erdman, A. G., Hunt, L. and Raghavacharyulu, E.
New Complex-Number Form of the Cubic of Stationary Curvature in a Computer-Oriented Treatment of Planar Path-Curvature Theory for Higher-Pair Rolling Contact. 80-DET-90.
Sandri, R.
See **Heggie, W. S.**
Sankar, T. S.
See **Bhat, R. B.**
Sankar, T. S.
See **Osman, M. O. M.**
Sarathi, P. I.
See **Tiab, D.**
Saravanamuttoo, H. I. H.
See **Karanjia, D. J.**

Sardesai, R.G.
See **Owen, R. G.**
Satyanarayana, A.
See **Barlow, R. E.**
Sauer, H. J., Davidson, G. W. and Chongrungreong, S.
Nucleate Boiling of Refrigerant-Oil Mixtures from Finned Tubing. 80-HT-111.
Sauereisen, F. J.
Corrosion Resistant Inorganic Cements and Coatings in Monolithic and Brick Systems for New Construction and Maintenance in Petro Chemical, Power, and Chemical Industries. 80-Pet-39.
Saur, J. M.
See **Baqué, P.**
Savage, M. and Loewenthal, S. H.
Kinematic Correction for Roller Skewing. 80-DET-76.
Saxena, S. C.
See **Grewal, N. S.**
Saxton, M. J.
See **Barrett, R. E.**
Scala, M.
See **Lazzeri, L.**
Scarton, H. A., Kennedy, W. C., Caplan, C. R. and Gaylo, K. R.
Energy Efficient Muffler for Reduction of Exhaust Noise Generated by a Pneumatic Grinder. 80-WA/NC-9.
Scarton, H. A., Kennedy, W. C. and Lacey, J. A.
Sources of Noise Produced During Pneumatic Chipping Hammer Operation. 80-WA/NC-11.
Scarton, H. A.
See **Kennedy, W. C.**
Scavuzzo, R. J. and Brown, S. J.
Seismic Analysis of Multi-Supported Components. 80-C2/PVP-35.
Scheffel, H. and Tournay, H. M.
The Development of an Optimum Wheel Profile for Self-Steering Trucks Under Heavy Axle Load Conditions. 80-WA/RT-5.
Scherm, M. and Magelssen, L. S.
Wastewater to Boiler Feedwater in the Organic Chemical Industry. 80-IPC/Pwr-7.
Schindler, S.
See **Foerster, S.**
Schiff, A. J.
A Critical Review of Risk and Reliability Concepts as Used to Mitigate Earthquake Effects on Power Systems. 80-C2/PVP-40.
Schiller, S. R., Warren, M. L. and Wahlig, M.
Dynamic Modeling and Experimental Simulation of Active Solar Energy Systems for the Evaluation of Control Strategies. 80-WA/Sol-14.
Schindwolf, R.
Frequency Response Analysis of Fluid Control Systems for Parabolic-Trough Solar Collectors. 80-WA/Sol-15.
Schlosser, A.
See **Sneck, H. J.**
Schmidt, G. R., Pinnekamp, W. and Wunder, A.
Optimum Tooth Profile Correction of Helical Gears. 80-C2/DET-110.
Schnatzmeyer, M. A. and Moyer, M. C.
Internal Flowline Connector for a Deepwater Riser. 80-Pet-68.
Schneider, R. E. and Stevens, J. A.
Coupled Fluid Structure Analyses of A Thin Cantilevered Shell. 80-C2/PVP-111.
Schoeckle, S.
See **Moebus, H.**
Scholl, K. H.
See **Grillenberger, T.**
Schrefler, B. A.
See **Ordorizzi, S.**
Schreiber, E.
See **Affenzeller, J.**
Schreiber, H.
See **Roberts, P. B.**
Schueller, R. B.
See **Cornwell, K.**
Schulmeister, R.
Improvement of Load Acceptance Characteristics of Turbocharged Diesel Engines for Gensets. 80-DGP-34.
Schultz, L. A. and Marsh, G. D.
Offshore and Coastal Alaskan Oil Spill Scenarios. 80-Pet-40.
Schultz, L. A.
See **Cox, J. C.**
Schulze, F. W.
See **Baker, P. H.**
Schwabe, J. E.
See **Peterson, D.**
Schweitzer, R. L. and Fowler, J. H.
Parametric Study of the Effect of Valve Geometry on Flow Characteristics. 80-Pet-37.
Schwertz, N.
See **Treat, C. H.**
Sea, R.
See **Liu, F. C.**
Seban, R. A., Greif, R., Peske, W. and Wong, H.
Predictions of Drop Models for the Dispersed Flow Downstream of the Quench Front in Tube Reflood Experiments. 80-WA/HT-47.
Sedgwick, L. M.
See **Jacobs, H. R.**
Sehgal, B. R., Braun, C. and Adamantiades, A.
Role of Advanced Reactors in Electricity Generation. 80-WA/NE-7.
Semerciyan, M.
See **Ahrens, F. W.**
Sernas, V.
See **Lee, E. I.**
Sersen, S. J.
See **Kennedy, M. J.**
Settles, G. S
See **Carlson, A. B.**
Shaalan, M.
See **Shibl, A.**
Shah, R. P., Ahner, D. J., Fox, G. R. and Gluckman, M. J.
Performance and Cost Characteristics of Combined Cycles Integrated with Second Generation Gasification Systems. 80-GT-106.
Shah, R. P.
See **Daniel, K. J.**
Shah, S. L.
See **Wan, R.**
Shamsi, S. S.
Influence of Ambient Conditions on the Total Performance of a Turbocharged Diesel Engine—A Computer Prediction. 80-DGP-3.
Shankar, P. N.
See **Kumar, A.**
Sharma, M. P., Cornelius, D. K., Rice, J. G. and Dougan, D. R.
Numerical Computation of Swirling Gas-Particle Flows: Application to Pulverized Coal Classifiers. 80-WA/HT-31.
Shaw, D. E.
See **Case, J. B.**
Shaw, H.
See **Kalfadelis, C. D.**
Shaw, L.
See **Jones, D.**
Shaw, T. R.
Royal Navy Experience in the Logistic Support of Marine Gas Turbines. 80-GT-109.
Shea, D. P., Shelton, J. E. and White, T. L.
Industrial Application of a Direct Refrigeration System for Energy Conservation. 80-Pet-1.
Shea, M. L., Messier, A. A. and Bondi, K. R.
Carbon Dioxide Effects on Submarines. 80-ENAs-32.
Shekleton, J. R.
See **Sood, V. M.**
Shelton, J. E.
See **Shea, D. P.**
Sherburne, P. A., Johnson, L. E. and Bell, M. J.
Operation and Maintenance of the Babcock & Wilcox Once-Through Steam Generator. 80-C2/NE-19.
Sherwin, E. T. and Nollet, A. R.
A Potential New Energy Source: Assessment of Energy Recovery from Municipal Solid Waste. 80-C2/PEM-2.
Sherwin, E. T. and Nollet, A. R.
An Update of Solid Waste Resource Recovery Technology: Improved Economics Through Potential Penetration of New Markets for Recycled Products. 80-ENAs-9.
Shibl, A. and Shaalan, M.
Turbulent Jet Attachment over a Circular Wall. 80-C2/Aero-2.
Shieh, G. P.
See **Cooley, D. B.**
Shih, C. C. and Cason, C.
Heat Transfer Characteristics of a Small Closed Cycle Circulator for High Energy Pulsed Laser. 80-HT-132.
Shih, C.-F. and Babcock, C. D.
Scale Model Buckling Tests of a Fluid Filled Tank Under Harmonic Excitation. 80-C2/PVP-66.
Shill, R. H.
See **Inch, W. W. R.**
Shimogo, T. and Shinohara, Y.
Vibrations of Square and Hexagonal Cylinders in a Liquid. 80-C2/PVP-97.
Shimokohbe, A. and Toyama, A.
A New Manufacturing System for Worm Gears. 80-C2/DET-73.
Shingu, S.
See **Takahashi, A.**
Shinohara, Y.
See **Shimogo, T.**
Shinozuka, M., Kameda, H. and Koike, T.
Ground Strain Estimation for Seismic Risk Analysis of Underground Lifelines. 80-C2/PVP-69.
Shoji, A.
See **Takanashi, S.**
Shoaping, S.
Earthquake Damage to Pipelines. 80-C2/PVP-156.
Shoup, T. E.
See **Young, S.-S. D.**
Shu, H. T.
See **Kuo, S. C.**
Shuaib, A. N., Kapoor, S. G. and Wu, S. M.
Explicit Identification of Machine Tool Structure and Cutting Process Using Bivariate Time Series Models. 80-WA/Prod-27.
Shurui, Z.
See **Weiming, T.**
Sidenstick, J. E.
See **Allen, R. E.**
Silling, S. A. and Gross, M. B.
A Method for Coupling Three-Dimensional Grids in a Hydrodynamic Code. 80-C2/PVP-102.
Simon, D. E. and Fynsk, A. W.
Suggested Control Values for Feedwater and Boiler Water Quality in Industrial Boilers. 80-IPC/Pwr-8.
Simon, H. A.
See **Rabadi, N. J.**
Simoneaux, G. E.
United States Geological Survey's (USGS) Failure and Inventory Reporting System (FIRS) for Safety Devices on Production Platforms in the Outer Continental Shelf (OCS). 80-Pet-4.
Sims, E. R.
Unit Handling-Problems and Opportunities. 80-WA/MH-7.
Singer, I. D.
See **Crow, D. E.**
Singh, M. P.
See **Con, V. N.**
Singh, P. P., Pillsbury, P. W., Stein, T. R., Cohn, A., Bauserman, G. W., Mulik, P. R. and Bazarian, E. R.
Combustion Effects of Coal Liquid and Other Synthetic Fuels in Gas Turbine Combustors—Part 1: Fuels Used and Subscale Combustion Results. 80-GT-67.
Singh, P. P., Bazarian, E. R., Mulik, P. R., Bauserman, G. W., Cohn, A. and Stein, T. R.
Comparative Testing of Petroleum Surrogate Fuels with Coal-Derived Liquids in a Combustion Turbine Burner. 80-GT-64.

Singh, S. N. and Hasan, M. M.
Free Convection about a Sphere at Small Grashof Number. 80-HT-73.
Singhal, A. C.
Experiments on Pipeline Joints. 80-C2/PVP-70.
Singhal, S. C.
See **DeCorso, S. M.**
Singhal, A. K.
See **Marchand, E. O.**
Sirignano, W. A.
See **Aggarwal, S. K.**
Sissom, L. E.
Death, Injury and Destruction of Property by Design. 80-WA/DE-13.
Sistino, A. J.
Comparison of Use of Hottel Chart and the Zone Method for Radiative Heat Transfer in our Open Cycle MHD Radiant Boiler. 80-HT-44.
Sivertsen, O. and Myklebust, A.
MECSYN: An Interactive Computer Graphics System for Mechanism Synthesis by Algebraic Means. 80-DET-68.
Sjöblom, B. G. A.
Some Aspects on Increasing Gas Turbine Combustor Exit Temperature. 80-GT-73.
Skinner, F. D., Smoot, L. D. and Hedman, P. O.
Mixing and Gasification of Coal in an Entrained Flow Gasifier. 80-WA/HT-30.
Slemrod, M.
See **Ball, J. M.**
Slobodkin, L. S.
See **Cess, R. D.**
Smith, D. P.
See **Horner, M. W.**
Smith, R. L.
See **Miller, R. N.**
Smith, R. N.
See **Griffin, F. P.**
Smoot, L. D.
See **Skinner, F. D.**
Sneck, H. J., Duffy, R. E. and Schlosser, A.
A Waste Energy Power Generation Concept—The Plumemill. 80-JPGC/Pwr-9.
Snyder, R. E.
Geothermal Well Casing Failure Modes. 80-Pet-84.
Sohn, C. W. and Chen, M. M.
Microconvective Thermal Conductivity in Disperse Two-Phase Mixtures as Observed in a Low Velocity Couette Flow Experiment. 80-HT-92.
Sohn, C. W.
See **Chen, M. M.**
Sohoni, V. and Haug, E. J.
A State Space Method for Kinematic Optimization of Mechanisms and Machines. 80-DET-43.
Sokolowski, D. E.
See **Wagner, W. B.**
Soler, A. I.
Stress Analysis of Rectangular Tubesheets for Condensers. 80-C2/NE-14.
Solomon, N. G.
See **Ward, M. E.**
Somers, J. C.
See **Kamm, K. G.**
Somerscales, E. F. C.
See **Parsapour, H. B.**
Soni, A. H.
See **Hossne, A. J.**
Sonin, A. A.
See **Huber, P. W.**
Soo, S. L.
See **Gibbs, R. T.**
Sood, V.M. and Shekleton, J. R.
Ongoing Development of A Low Emission Axisymmetric Annular Vortex Combustor for an Industrial Gas Turbine. 80-GT-58.
Sorensen, J.
See **Chandra, K.**
Souder, P. S.
Coal Slurry Pipeline Economics for Alternative Fluidizing Mediums. 80-Pet-46.
Spada, A. J. and Goldstein, N. A.
Efficient Pipe Whip Restraint Design. 80-C2/PVP-54.
Spalding, D. B.
See **Marchand, E. O.**
Spalding, D. B.
See **Maxwell, T. T.**
Spencer, A. C.
See **Takeuchi, K.**
Spengler, C. J.
See **Bauserman, G. W.**
Spikes, H. A. and Macpherson, P. B.
Water Content of Helicopter Gear Oils. 80-C2/DET-12.
Spitze, L. A.
See **Wood, P. C.**
Spivey, J. J. and Barona, N.
Heat Transfer in Extrusion of Plastic Pipe Downstream of the Die. 80-HT-104.
Spring, A. H.
See **McDonald, C. F.**
Springer, K. J.
See **Ullman, T. L.**
Squarer, D.
See **Takeuchi, K.**
Sribnik, F.
A Portable Oxygen Subsystem-Description and Preliminary Thermal Performance Prediction. 80-ENAs-7.
Srinivasan, J.
See **Lee, S. L.**
Stafford, E.
See **Belie, R. G.**
Stalmach, D. D.
See **Howell, H. R.**
Stanislao, J.
See **Rieder, W. G.**
Starley, G. P., Purcell, S. P., Manis, S. L. and Pershing, D. W.
Parameters Influencing the Formation of NO_x Emissions in Stoker-Fired Coal Combustion. 80-IPC/Fu-3.
Staroselsky, N.
Better Efficiency and Reliability for Dynamic Compressors Operating in Parallel or in Series. 80-Pet-42.
Steele, H.
See **Wen, L.**
Steele, W.G.
See **Kumar, R. A.**
Stein, R. P.
See **Cheung, F. B.**
Stein, T. R.
See **Singh, P. P.**
Steindorff, G. N.
Unique Aspects of Slurry Pipelines. 80-WRK/Pet-3.
Steiner, W. E.
See **Robilliard, G. A.**
Steininger, D. A.
See **Green, S. J.**
Stephens, J. O.
See **Liburdi, J.**
Stephenson, M. B.
MOVIE.ARIZONA—A Continuous-Tone Hidden Line Program for 16-Bit Mini-Computers. 80-C2/PVP-131.
Stepka, F. S.
Uncertainties in Predicting Turbine Blade Metal Temperatures. 80-HT-25.
Sterner, R. A.
See **Fowler, J.**
Sternlicht, B. and Colosimo, D. D.
New Perspectives on Rankine Cycles. 80-DGP-36.
Stevens, J. A.
See **Schneider, R. E.**
Stewart, W. E. and Buck, S. L.
Experimental Free Convection from an Inclined Cylinder. 80-WA/HT-29.
Stockemer, F. J.
See **Friedman, R.**
Stoker, W. P.
See **McDonald, J. S.**
Stolarski, T.A.
See **Briscoe, B. J.**
Stone, D.
See **Thomas, T. J.**
Stoneking, J. E. and Kryter, R. C.
Screening Procedures for Vibrational Qualification of Nuclear Plant Piping. 80-C2/PVP-4.
Storrs, C. L.
See **McDonald, J. S.**
Stotts, R. E., Warrington, R. O. and Mussulman, R. L.
Simulation and a Preliminary Comparison of Passive Solar Heating Systems. 80-HT-17.
Strang, J. E.
See **Crabtree, R. E.**
Stratton, W. E. and Flynn, W. R.
Managing Turnover in High Technology Industry. 80-WA/Mgt-7.
Street, R. L.
See **Howe, B. M.**
Strom, S. S.
See **Chapman, J. N.**
Stroom, C.
See **Bouchez, J. P.**
Studley, B. C.
Steam Blowing Acceptance Criteria: It's Time a Valid Criteria Exists for Commercial Power Stations. 80-JPGC/Pwr-3.
Stultz, J. W. and Paul, D. B.
Results of a Government and Industry Survey of the Heating Methods Used to Determine Missile Structural Temperatures. 80-ENAs-26.
Stutrud, J. S.
See **Roquemore, W. M.**
Sucala, F.
Determination of the Kinematic Characteristics of a Mechanism with a Variable Length Connecting Rod. 80-DET-35.
Suchsland, K. E., Kwong, K. C., Fretter, E. F., Boyd, R. D., Auerbach, I. and Yoshimura, J. R.
Thermal Response Modeling of a Contact-Handled Transuranic Waste Shipping Container System to a Fire. 80-HT-36.
Sugano, H., Nakajima, M. and Yamaguchi, N.
Factors Affecting Blade Ash-Erosion in Axial Induced Draft Fans. 80-JPGC/Pwr-7.
Sullivan, P. P.
See **Sadeh, W. Z.**
Sullivan, W. N.
See **Lobitz, D. W.**
Sundaram, R. K.
See **Nijhawan, S. M.**
Sundararajan, C.
A Double Summation Procedure for the Combination of Seismic Responses of Multiply-Excited Piping Systems. 80-WA/PVP-1.
Sundell, R. E., Goodwin, W. W., Kercher, D. M., Dudley, J. C. and Triandafyllis, J.
Boiling Heat Transfer in Turbine Bucket Cooling Passages. 80-HT-14.
Sununu, J. H.
See **Los, C. D.**
Sutton, G. W.
A General Theory of Thermal Distortions of High Energy Laser Mirrors, Including the Effects of Pulses. 80-HT-134.
Sutton, W. H.
See **Oezisik, M. N.**
Suzuki, T.
See **Kobayashi, A.**
Svard, C. D., Mitchell, J. W. and Beckman, W. A.
Design Procedure and Application of Solar-Assisted Series Heat Pump Systems. 80-WA/Sol-9.
Swank, L. R.
See **De Bell, G. C.**
Swift, W. M.
See **Lee, S. H. D.**
Sykes, R. N.
The Planning and Execution of Engineering Work in a Project Environment. 80-WA/Mgt-2.

T

Tabb, E. S.
See **Ward, M. E.**

Tabor, B. J.
Failure of Thin Film Lubrication—An Expedient for the Characterization of Lubricants. 80-C2/Lub-43.
Taha, I. S. and Elsayed, M. M.
Theoretical Study of Absorbed Solar Energy in Multi-Layer Absorber Coatings for Receivers of Solar Concentrators—Part II: Heat Transfer Analysis. 80-HT-105.
Taha, M. M. A., Ettles, C. M. M. and Macpherson, P. B.
The Rigidity and Performance of a Simple Spiral Bevel Helicopter Gearbox. 80-C2/DET-103.
Takahashi, A., Shingu, S. and Kosugi, I.
Hydraulic Resistance Effects on Hydraulic Elevator. 80-DET-112.
Takanashi, S. and Shoji, A.
On the Temperature Rise in the Teeth of Plastic Gears. 80-C2/DET-107.
Takeuchi, K. and Squarer, D.
Analysis of a Blowdown Experiment of 1/10 Scale Steam Generator Model. 80-C2/PVP-98.
Takeuchi, K. and Spencer, A. C.
Two-Dimensional Method of Characteristics for Fluid-Structure Interaction. 80-C2/PVP-114.
Takagaki, I.
See **Ujita, K.**
Taki, A.
See **Mizutani, Y.**
Talbot, T. F.
Winch Design—Good or Bad. 80-WA/DE-11.
Tallian, T. E.
Rolling Bearing Life Modifying Factors for Film Thickness, Surface Roughness, and Friction. 80-C2/Lub-16.
Talty, T. F.
See **Robin, T. T.**
Tam, K. K.
See **Billimoria, H. D.**
Tamura, H.
See **Sakai, T.**
Tanaka, T.
An Experimental Study of Backflow Phenomena in a High Specific Speed Propeller Pump. 80-FE-6.
Tang, J. H. K.
See **Lee, L. S. S.**
Tang, J. T. and Howe, W.
Heat Transfer Analyses for the 6′ × 6′ Atmospheric Fluidized Bed Development Facility. 80-HT-128.
Tanrikut, S.
See **Wagner, W. B.**
Tate, R.E.
See **Randall, D. E.**
Tatge, R. B., Gordon, C. R. and Conkey, R. S.
Gas Turbine Inlet Air Filtration in Marine Environments—Part 1: Marine Aerosols and Equipment for their Control. 80-GT-174.
Tatge, R. B., Gordon, C. R. and Conkey, R. S.
Gas Turbine Inlet Air Filtration in Marine Environments—Part II: Commercial Experience and Recommended Practice. 80-GT-175.
Tatum, C. B. and Loth, R. A.
Technology Assessment: A Background Review. 80-WA/Mgt-3.
Tawfiq, S. S. and Margolis, D. L.
Bond Graph Models for Simulating HVAC Systems. 80-WA/Sol-16.
Taylor, C. A. M.
Aerodynamics of Marine Gas Turbine Inlet and Exhaust Systems. 80-GT-114.
Taylor, C. E.
See **Moir, R. W.**
Taylor, J. R.
Heat Transfer Phenomena in Gas Turbines. 80-GT-172.
Taylor, P. A.
See **Hayden, O.**
Taylor, W. M.
See **Kress, L. A.**
Tejima, T.
See **Akazawa, M.**
Temple, T. W., Foltz, F. L. and Jamalailail, H . R.
A Gas Turbine Maintenance Information System for the Saudi Arabian East-West Crude Oil Pipeline. 80-GT-107.
Tennant, M. H.
Sensitivity Calculations for Low Heat Generating DEFENSE Waste Repository Temperatures. 80-HT-26.
Terauchi, Y., Nadano, H. and Nohara, M.
Effect of Tooth Profile Modification on Scoring Resistance of Spur Gears. 80-C2/DET-19.
Termuehlen, H.
See **Kozak, L.**
Tesar, D.
See **Beran, M. A.**
Tesar, D.
See **Freeman, R. A.**
Thacker, J. G., O'Reagan, J. R. and Aylor, J. H.
A Wheelchair Dynamometer. 80-C2/DET-114.
Thomas, F. J. and Hold, G. E.
Modern Marine Diesel Engine Lubricants and Their Development. 80-DGP-40.
Thomas, L. C. and Al-Sharif, M. M.
An Integral Analysis for Incompressible Turbulent Thermal Boundary Layer Flow: Nonuniform Wall Heating. 80-WA/HT-57.
Thomas, T. J., Garg, V. K. and Stone, D.
Thermal Fatigue Analysis of a Railcar Wheel Under Drag Braking. 80-WA/DE-4.
Thomas, T. J.
See **Garg, V. K.**
Thompson, B. S. and Gandhi, M. V.
The Finite Element Analysis of Mechanism Components Made from Fiber-Reinforced Composite Materials. 80-DET-63.
Thompson, B. S.
A Variational Formulation for the Finite Element Analysis of High-Speed Machinery. 80-WA/DSC-38.
Thompson, B. S.
See **Gandhi, M. V.**
Thompson, D. H.
See **Chung, K. S.**
Thompson, R. E. and Glavas, X. G.
Fiber Optic Cables in the Ocean Environment. 80-WA/OCE-6.
Thompson, R. E.
See **Calvo, R.**
Thoms, R. L.
Tesing Rock Salt for Compressed Air Energy Storage. 80-Pet-79.
Thomson, M.
See **Belle, R. G.**
Thorin, L.
See **Lundin, A.**
Thorpe, J. F.
Simple Engineering Homework Negates Alleged Defect in Ladder Accident Case. 80-WA/DE-12.
Tiab, D., Sarathi, P. I. and Crichlow, H. B.
Thermodynamic Analysis of Gas Reservoirs. 80-Pet-34.
Tien, C. L.
See **Chow, L. C.**
Tilliette, Z. P. and Pierre, B.
Efficient Power Generation from Large 750°C Heat Sources — Application to Coal-Fired and Nuclear Power Stations. 80-GT-25.
Tilliette, Z. P. and Pierre, B.
Large, Flexible, Efficient, 750°C Closed Gas Cycle Coal-Fired or Nuclear Cogeneration Plants. 80-GT-32.
Tilliette, Z. P. and Pierre, B.
Reciprocal Efficiency Improvement of High Temperature Fossil and Low Temperature Solar Heat Sources for Power Generation. 80-GT-34.
Tishkoff, J. M., Hammond, D. C. and Chraplyvy, A. R.
Diagnostic Measurements of Fuel Spray Dispersion. 80-WA/HT-35.
Tobe, T. and Inoue, K.
Longitudinal Load Distribution Factor for Straddle- and Overhang-Mounted Spur Gears. 80-C2/DET-45.
Toda, A. and Tordion, G. V.
Approximation of Gear Transmission Error by Standard Gear Errors. 80-C2/DET-71.
Todreas, N. E.
See **Gierszewski, P. J.**
Token, K. H.
See **Cook, R. S.**
Tokunaga, Y.
See **Azuma, T.**
Tollinger, D. and Williams, B. A.
Evaluation of Biological Models Using Spacelab. 80-ENAs-38.
Tolokan, R. P., Erickson, A. R. and Frank, R. T.
Blade Tip and Knife Edge Rub Testing of FELTMETAL® Seals. 80-GT-154.
Tolot, B. L.
See **Kelley, J. K.**
Tomizuka, M.
See **Horowitz, B.**
Tordion, G. V.
See **Toda, A.**
Tournay, H. M.
See **Scheffel, H.**
Tous, I. A.
See **Makay, E.**
Tous, I. A.
See **Maloney, K. L.**
Toyama, A.
See **Shimokohbe, A.**
Trautmann, C. H.
See **O'Rourke, T. D.**
Treat, C. H. and Schwertz, N.
Rockbeds for Comfort Cooling: An Assessment in Several U.S. Cities. 80-WA/Sol-8.
Triandafyllis, J.
See **Sundell, R. E.**
Trimble, S. W.
See **Daudet, H. C.**
Triput, N. S.
See **Cess, R. D.**
Trujillo, A. A.
See **Eggers, P. E.**
Truong, H. V. and Mancuso, R. J.
Performance Predictions of Radiating Annular Fins of Various Profile Shapes. 80-HT-31.
Tsuneya, R.
See **Ojita, K.**
Tucker, A. I.
The Gear Design Process. 80-C2/DET-13.
Turaga, M., Sander, D. M. and Dumouchel, P. E.
A Simplified Computer-Assisted Energy Calculation Procedure for the Evaluation of Building Architectural Concepts. 80-WA/DSC-42.
Turner, J. H.
See **Ahmadian, M.**
Turner, R. F. and Lignon, D. M.
The Role of Advanced Converters. 80-WA/NE-6.
Turner, W. D.
See **Mujahid, A.**
Tuyen, L. D.
See **Con, V. D.**

U

Udell, K. S.
See **Jacobs, H. R.**
Ueno, T., Ariura, Y. and Nakanishi, T.
Surface Durability of Case-Carburized Gears—On a Phenomenon of "Gray-Staining" of Tooth Surface. 80-C2/DET-27.
Ujita, K., Tsuneya, R. and Takagaki, I.
Design and Service Experiences with the Two-Stage Turbocharged Mitsubishi UE-E Type Diesel Engines. 80-DGP-29.
Ullman, T. L., Springer, K. J. and Baines, T. M.
Effects of Six Variables on Diesel Exhaust Particulate. 80-DGP-42.
Umetani, Y.
See **Hirose, S.**

Umezawa, K. and Houjoh, H.
On the Study of the Sound of Gear and Gear Box Using Acoustical Holography. 80-C2/DET-44.
Updike, D. P. and Yuceoglu, U.
Delamination of Layered Cylindrical Shells Under Internal Pressure. 80-WA/PVP-7.
Upp, E. L.
See **Hodgeman, H. H.**
Utt, M. E. and Clark, R. A.
Coefficient of Friction Between Submerged Ice and Soil. 80-Pet-41.

V

Vachon, R. I.
See **Buck, C. L.**
Vaka, G. A.
Power Generation Using a Downhill Conveyor 80-WA/MH-15.
Vance, J. M. and Gould, R. W.
Failure Analysis and Expert Witness fo. Products Liability—A Responsibility for the Engineering Profession. 80-WA/Mgt-6.
Vanco, M. R.
See **Crow, D. E.**
Van Campen, D. H., Weppelink, H. and Leppink, G. J.
Some Aspects of the Analysis of the Free Vibrations of Finite Cylindrical Shells and Tubes with a Surrounding Fluid. 80-C2/PVP-105.
Vanderhoof, D. W.
See **Genetti, W. E.**
van der Mersch, P. L., Hupp, J. D., Burns, P. J. and Winn, C. B.
Thermal Performance Prediction of Cylindrical Water Walls Using Daily Weather Data. 80-HT-19.
Vandiver, J. K. and Campbell, R. B.
The Determination of Modal Damping Ratios from Maximum Entropy Spectral Estimates. 80-WA/DSC-29.
Van Hagan, T. H.
See **McDonald, C. F.**
Van Haren, J., De Wachter, L. and Vanhonacker, P.
Modal Analysis on Standard Gear Units. 80-C2/DET-79.
Vanhonacker, P.
See **Van Haren, J.**
Van Westenbrugge, J. K.
See **Knapp, M. H.**
Varnardo, S. G.
The Federal Program in Geothermal Drilling and Completion Research and Development. 80-Pet-88.
Vatikiotis, C. S. and Salinas, D.
Heat Transfer in a Fibrous Composite with Combustion. 80-HT-108.
Velinsky, S. and Costello, G. A.
Axial Response of Oval Wire Ropes. 80-WA/OCE-3.
Venkatesh, V. C.
See **Krishnamurthy, R.**
Vermes, G.
See **De Corso, S. M.**
Vieth, G. L. and Plummer, D. F.
Selection of a Closed Brayton Cycle Gas Turbine for an Intermediate-Duty Solar-Electric Power Plant. 80-GT-27.
Vijay, D. K. and Kozluk, M. J.
Pipe Whip Analysis of Unrestrained Piping Systems. 80-C2/PVP-149.
Vijay, M. M. and Brierley, W. H.
Drilling of Rocks by High Pressure Liquid Jets: A Review. 80-Pet-94.
Viskanta, R. and Weirich, T. L.
Effects of Pollutants and Urban Parameters on Atmospheric Temperature. 80-WA/HT-4.
Viskanta, R.
See **Diab, M. R.**
Vizintin, J.
See **Hlebanja, J.**
Vogel, E. F. and Edgar, T. F.
An Adaptive Dead Time Compensator for Process Control. 80-WA/DSC-10.
Vogt, R.L.
Low Btu Coal Gas Combustion in High Temperature Turbines. 80-GT-170.
Vormstein, W. and Rauscher, G.
Investigation of Various Turbocharging Systems for a Medium-Speed Four-Stroke Diesel Engine. 80-DGP-2.
Vorum, P. C.
Short Pipe Manifold Design for Four-Stroke Engines: Part II. 80-DGP-6.
Vrable, D. L.
See **McDonald, C. F.**

W

Wagner, W. B., Tanrikut, S. and Sokolowski, D. E.
Performance of Annular Prediffuser-Combustor Systems. 80-GT-15.
Wahi, K. K., Salz, W. and Baltes, B.
A Numerical Simulation of a Thermally-Loaded Rock Mass Surrounding a Borehole. 80-HT-40.
Wahlig, M.
See **Schiller, S. R.**
Wainwright, R. M.
See **Lace, D. C.**
Waldron, K. J.
See **Kumar, A.**
Walker, B. H .
See **Billman, L. S.**
Wallis, H. V.
See **Firmin, A.**
Walsh, J. L.
See **McGowan, T. F.**
Wan, R., Shah, S. L. and Fisher, D. G.
Application of Adaptive Control to a Computer Controlled Process. 80-WA/DSC-40.
Wang, C. C.
On Derivation of Hertzian Impact Formula in the Geared Rotational System. 80-C2/DET-55.
Wang, H. F. and Chiang, C. W.
Nocturnal Radiation from a Solar Collector. 80-WA/Sol-35.
Wang, J. C. F., Flower, W. L. and Hardesty, D. R.
Diagnostic Development for Advanced Power Systems. 80-GT-128.
Wang, L. R.-L.
Parametric Seismic Responses of Buried Pipelines. 80-C2/PVP-71.
Wang, Y. F.
See **Neilson, H. C.**
Ward, M. E., Solomon, N. G. and Tabb, E. S.
Industrial Waste Heat Recovery. 80-WA/HT-17.
Warinner, D. K. and Pearson, J. T.
Fluid-Inertia Effects in Radial Flow Between Oscillating, Rotating Parallel Disks. 80-C2/Lub-48.
Warinner, D. K.
The LMFBR Fuel-Design Environment for Endurance Testing, Primarily of Oxide Fuel Elements with Local Faults. 80-C2/NE-25.
Warinner, D. K.
LMFBR Operational and Experimental Local-Fault Experience, Primarily with Oxide Fuel Elements. 80-C2/NE-21.
Warren, M. L.
See **Schiller, S. R.**
Warrington, R. O.
See **Stotts, R. E.**
Warrix, L.
See **Neeley, B. B.**
Washam, R. M.
See **Liu, T. M.**
Wassef, F. M. and Huzayyin, A. S.
Unsteady Viscous Heating in Circular Flow between Moving Surfaces. 80-HT-126.
Wassell, A. B. and Bhangu, J. K.
The Development and Application of Improved Combustor Wall Cooling Techniques. 80-GT-66.
Watson, A. O.
See **Golan, M.**
Watson, N.
See **Kyrtatos, N.**
Weber, C. F.
See **Maudlin, P. J.**
Weber, D.
See **Jaw, L.**
Webster, D. J.
See **Fricke, H. D.**
Weck, M., Gogrewe, H.-U., and Ernst, D.
Numerical Controlled Dressing of Profile Grinding Wheels. 80-C2/DET-74.
Wehage, R. A. and Haug, E. J.
Generalized Coordinate Partitioning for Dimension Reduction in Analysis of Constrained Dynamic Systems. 80-DET-106.
Wei, A. C.
See **Curry, C. E.**
Weidner, R. J.
See **Mulholland, R. J.**
Weiming, T. and Shurui, Z.
An Investigation of Earthquake Damage to Electrical Equipment. 80-C2/PVP-85.
Weiming, T.
See **Chaiyung, L.**
Weina, H.
See **Crow, D. E.**
Weiner, E. O.
See **Dahlke, H. J.**
Weinman, J. A.
See **Harshvardhan.**
Weirich, T. L.
See **Viskanta, R.**
Weldon, W. F.
See **Rylander, H. G.**
Wen, L. and Steele, H.
Thermal Storage Requirements for Parabolic Dish Solar Power Plants. 80-WA/Sol-21.
Wennagel, G. J.
College Training Recommmendations for Graduates Planning to Become Structural or Mechanical Design Engineers in the Aerospace Industry. 80-C2/DE-4.
Weppelink, H.
See **Van Campen, D. H.**
Werne, R. W. and Kelly, J. M.
Rate Dependent Inelastic Behavior of Polycrystalline Solids Using a Dislocation Model. 80-C2/PVP-14.
Wesely, M. L.
Comparisons of Surface-Renewal Predictions with Field Data. 80-WA/HT-67.
Wessell, R. A.
See **Yuen, W. W.**
Wesselo, J. H. and Kimstra, K.
Latest Design and Development Information, First Field Experience with a Third Generation Medium Speed Engine. 80-DGP-25.
West, P. H.
The Interaction Between Fluid and Thin Deformable Structures in 2D Hydrocodes. 80-C2/PVP-138.
Westsik, J. H.
See **Darnell, J. R.**
Westwater, J. W.
See **Yilmaz, S.**
Weth, G.
See **Moskowitz, S.**
Whalley, P. B.
See **Brisbane, T. W. C.**
Whipple, J. C., Amos, J. C. and Neely, H. H.
U.S. Large Leak Sodium-Water Reaction Test Program. 80-WA/NE-3.
White, A. J.
The Prediction of the Flow and Heat Transfer in the Vicinity of a Jet in Crossflow. 80-WA/HT-26.
White, D. J. and Cichanowicz, E.
Auto-ignition and Vaporization of No. 3 Diesel

Oil Spray Under Lean Conditions. 80-GT-10.

White, E.
See **Kunstadt, E.**

White, G.
A Low Height 2300 kW Helicopter Transmission with an Enclosed Planetary Gear. 80-C2/DET-17.

White, T. L.
See **Shea, D. P.**

Wickens, A. J. and Ørbeck, F.
An Integrated Approach to Motor Ship Propulsion Design. 80-DGP-41.

Wieser, P.
See **Brezina, M.**

Wilde, R. C.
See **Griswold, H. R.**

Wilkes, C. and Gerhold, B.
NO_x Reduction from a Gas Turbine Combustor Using Exhaust Gas Recirculation. 80-JPGC/GT-5.

Wilkins, G. A.
An Electro-Optical Array Support Cable. 80-WA/OCE-8.

Wilkins, M. L. and Reaugh, J. E.
Plasticity under Combined Stress Loading. 80-C2/PVP-106.

Willey, E.
See **Munson, D. P.**

Williams, B. A.
Life Sciences Experiments for Dedicated Spacelab Missions. 80-ENAs-37.

Williams, B. A.
See **Berry, W. E.**

Williams, B. A.
See **Tollinger, D.**

Williams, C. E.
See **Goldberg, A. J.**

Williams, H. A.
See **Kotlin, J. J.**

Willmert, K. D.
See **Naganathan, G.**

Wilson, J. F.
See **Nicolet, W. E.**

Winkler, H. E. and Roebelen, G. J.
Development of a Preprototype Thermoelectric Integrated Membrane Evaporation Subsystem for Water Recovery. 80-ENAs-46.

Winn, C. B.
See **van der Mersch, P. L.**

Winn, L. W. and Lee, C. C.
Lip Seals—Stress and Deformation Studies. 80-C2/Lub-11.

Winnick, J.
CO_2 Concentrations in a Molten Carbonate Electrochemical Cell. 80-ENAs-14.

Withers, B. F.
Anti-Exposure Suits in the VP Community. 80-ENAs-43.

Wojcik, C. K.
Synthesis of the Four-Bar Function Generator: A Novel Approach. 80-DET-26.

Wolf, J. C., Moskowitz, S. and Manning, G. B.
Development of a High Temperature Turbine for Operation on Coal-Derived Fuel. 80-GT-188.

Wolff, W. J., Clark, G. and Rudzki, J. E.
On-Site Quality Control of Insolation Measurements. 80-WA/Sol-25.

Won, Y. S.
See **Hanseth, E. J.**

Won, Y. S.
See **Zimmerman, W. F.**

Wong, H.
See **Seban, R. A.**

Wong, J. C.
See **Bagci, C.**

Wong, K.
The Internal Heat Transfer Coefficient of a Porous Medium—Non-Thermal Equilibrium Cases. 80-HT-102.

Wong, L. W.
See **Yuen, W. W.**

Wong, P. K.
On the Irrotational-Flow Velocity Potential Function and a New Stream Function of Fluid Mechanics. 80-C2/Aero-3.

Wong, S. and Hochreiter, L. E.
Low Reynolds Number Forced Convection Steam Cooling Heat Transfer in Rod Bundles. 80-WA/HT-59.

Woo, H. H.
Simplified Failure Prediction Method for Straight Tubes under Pure Bending at Elevated Temperatures. 80-C2/NE-20.

Wood, B. D.
See **Kotas, J. F.**

Wood, C. D.
A Simplified NO_x Model for Spark Ignition Engines. 80-DGP-43.

Wood, P. C., Ballou, E. V., Spitze, L. A. and Wydeven, T.
The Preparation of Calcium Superoxide in a Flowing Gas Stream and Fluidized Bed. 80-ENAs-18.

Wood, R. F.
See **Giles, G. E.**

Woods, J. L.
See **Lewis, J. T.**

Woods, M.
See **Kamo, R.**

Wright, D. E.
See **Campbell, J.**

Wright, D. E.
See **Carpenter, H. W.**

Wright, P. K.
See **Arndt, G.**

Wu, S. M.
See **Shuaib, A. N.**

Wu, Y. C. L.
See **Chapman, J. N.**

Wunder, A.
See **Schmidt, G. R.**

Wussler, A. J. and Crawford, W. R.
Installation of a Gasoline Plant Rich Oil Compressor Exhaust Heat Recovery System. 80-Pet-6.

Wyatt, J. R.
See **De Corpo, J. J.**

Wydeven, T.
See **Wood, P. C.**

Wysocki, M.
See **Arumi-Noe, F.**

X

Xistris, G. D.
See **Bhat, R. B.**

Y

Yamada, T.
Numerical Simulation of Mesoscale Atmospheric Circulations over the Lake Michigan. 80-WA/HT-65.

Yamada, T.
See **Kamo, R.**

Yamaguchi, N.
See **Sugano, H.**

Yambor, S. P. and Maule, G. R.
Design and Operating Aspects of Campbell Plant Circulating Water System. 80-JPGC/Pwr-17.

Yang, R. J., Johnson, S. A. and McElroy, M. W.
Heat Transfer Modeling for Two-Stage Pulverized Coal-Fired Combustors. 80-HT-114.

Yang, T. T.
See **Rayan, M. A.**

Yao, L. S.
Buoyancy Effects on a Boundary Layer Along an Infinite Vertical Cylinder with a Step Change of Surface Temperature. 80-WA/HT-25.

Yao, L. S. and Cherney, W.
Transient Phase-Change Around a Horizontal Cylinder. 80-HT-78.

Yao, S. and Rane, A.
Numerical Study of Turbulent Droplet Flow Heat Transfer. 80-WA/HT-48.

Yao, S. C., Hochreiter, L. E. and Leach, W. J.
Heat Transfer Augmentation in Rod Bundles Near Grid Spacers. 80-WA/HT-62.

Yarden, A. L. and Noe, R. R
Improvement in Performance and Availability of Currently Operating MSR's. 80-JPGC/Pwr-12.

Yasuda, A. K.
See **Brink, D. F.**

Yelle, H.
See **Gauvin, R.**

Yen, S. M. and Yirehus, T.
Numerical Solution of the Nonequilbrium Vapor Motion Near an Evaporating Interphase Boundary. 80-HT-82.

Yilmaz, S., Hwalek, J. J. and Westwater, J. W.
Pool Boiling Heat Transfer Performance for Commercial Enhanced Tube Surfaces. 80-HT-41.

Yimer, B., Crisp, J. N. and Mahefkey, E. T.
Transient Thermal Analysis of Phase Change Thermal Energy Storage Systems. 80-HT-2.

Ying, S. P., Dennison, E. E. and Lescoe, J. D.
Pulsation of High Pressure Turbine. 80-JPGC/Pwr-14.

Yonekura, M. and Ainoura, M.
A Research on Finishing Hardened Gears of Large Modules. 80-C2/DET-62.

Yonekura, M.
See **Ainoura, M.**

Yonekura, M.
See **Hiroo, Y.**

York, D. R.
See **Cross, F. L.**

Yoshimura, H. R.
See **Eggers, P. E.**

Yoshimura, H. R.
See **Pope, R. B.**

Yoshimura, H. R.
See **Suchsland, K. E.**

Younes, Y. K.
See **Modrey, J.**

Young, F. M.
See **Ali, M. W.**

Young, I. T.
A Wider Scope for Nitrided Gears. 80-C2/DET-46.

Young, S.-S. D. and Shoup, T. E.
The Sensitivity Analysis of Cam Mechanism Dynamics. 80-DET-93.

Younghouse, E.
Fuel Conserving Lubricants for Diesel Engines. 80-DGP-9.

Yirehus, T.
See **Yen, S. M.**

Yu, A. T. and Mahr, D.
Bulk Handling—Advances in Mining, Transportation and Processing. 80-WA/MH-9.

Yu, C. P.
See **Rajaram, S.**

Yu, I. -W.
Determination of Hydrodynamic Mass Using a General Purpose Finite Element Structural Code. 80-C2/PVP-117.

Yuceoglu, U.
Seismic Design of Equipment Supports and Connections in Industrial Installations—A Brief Summary. 80-C2/PVP-73.

Yuceoglu, U.
See **Updike, D. P.**

Yuen, W. W. and Wessel, R. A.
Application of the Integral Method to Two-Dimensional Transient Heat Conduction Problems. 80-WA/HT-55.

Yuen, W. W. and Rasky, D. J.
Application of the P-1 Approximation of Radiative Heat Transfer in a Non-Gray Medium. 80-HT-28.

Yuen, W. W. and Wong, L. W.
Radiative Heat Transfer in a Rectangular Enclosure with Gray Medium. 80-HT-101.

Yura, T.
See **Azuma, T.**

Yurich, S. P.
See **Genetti, W. E.**

Z

Zaccardi, V. A.
See **Campbell, N. T.**
Zalesak, P. F.
Optimizing the Performance of the P-3C Environmental Control System. 80-ENAs-6.
Zappa, G. and Franca, T.
A Four-Stroke High Speed Diesel Engine with Two-Stage of Supercharging and Variable Compression Ratio. 80-DGP-23.
Zarotti, G. L.
See **Filippi, F.**
Zehner, P.
Calculation of Four-Quadrant Characteristics of Turbines. 80-GT-2.
Zetlmeisl, M. J. and McCarthy, K. J.
An Investigation of the Relationship Between Partial Pressure of SO_3 and the Corrosion Potential of In 738 in Na_2SO_4 Melts at 900°C. 80-WA/CD-3.
Zhong-quan, X.
Aseismic Design of Towers, Tanks and Furnaces. 80-C2/PVP-87.
Ziada, H. H. and Abd El Latif, A. K.
Loading Conditions in Bolted and Riveted Joints Affected by Plate Thickness Ratio. 80-DE-2.
Zielinski, J.
See **Morrison, F. R.**
Zimmer, R. A.
See **Bailey, E. I.**
Zimmerlin, S. L.
See **Pocock, R. E.**
Zimmerman, W. F., Divakaruni, S. M. and Won, Y. S.
Sodium Heat Pipe Use in Solar Stirling Power Conversion Systems. 80-C2/Sol-13.
Zlokolica, M. Z. and Popov, R. V.
Dynamic Analysis of Variators with Half Ball and Two Discs as Non-Holonomic Systems. 80-DET-95.
Zirin, R. M. and Krempl, E.
A Finite Element Time Integration Method for the Theory of Viscoplasticity Based on Infinitesimal Total Strain. 80-C2/PVP-33.
Zollinger, H. A.
Conveyor Systems and Innovations. 80-WA/MH-16.
Zorzi, E. S. and Flemming, D.
Balancing of a Power-Transmission Shaft with the Application of Axial Torque. 80-GT-143.
Zorzi, E. S., Burgess, G . and Cunningham, R.
Elastomer Damper Performance—A Comparison with a Squeeze Film for a Supercritical Power Transmission Shaft. 80-GT-162.
Zuber, T.
See **Baque, P.**
Zumrick, J.
See **Kuehn, L. A.**

Index to
MECHANICAL ENGINEERING

Volume 103, January-December 1981

A

Abbate, A. G., Jr. Engineers' Salaries (C) **My 43**

Abbin, J. P., Jr. Binary Rankine-Cycle Engines for Solar-Thermal Power Systems (80-WA/Sol-19) (A) **Ap 94**

Abdelhamid, A. N. Effects of Vaneless Diffuser Geometry on Flow Instability in Centrifugal Compression Systems (81-GT-10) (A) **Je 104**

Abdelwahed, S. T. Turbulent Wakes in Shallow Waters (81-FE-13) (A) **S 81**

Abernathy, G. H. Operational Characterization of the Solar-Thermal Power System Near Willard, N. M. (80-WA/Sol-39) (A) **Ap 95**

Abey, A. E. Thermal Properties of Rock Salt and Quartz Monzonite to 573 K and 50-MPa Confining Pressure (81-HT-51) (A) **O 95**

Aboudi, J. Transition From Brittle to Ductile Fracture for a Rapidly Propagating Crack (81-PVP-16) (A) **Ag 80**

Abrasive Machining

Single Grit Simulation of the Abrasive Machining of Wood (80-WA/Prod-2) (A) **My 82**

Abrasive Wear

Toward a Mechanical Wear Equation (81-Lub-5) (A) **D 96**

Absolute Freedom

The Illusion of Absolute Freedom (C) **Mr 65**

Absorber Plates

Nocturnal Radiation from a Solar Collector (80-WA/Sol-35) (A) **Ap 95**

Temperature Variation in the Absorber Plate of an Air Heating Flat Plate Solar Collector (80-WA/Sol-2) (A) **Ap 92**

Absorbers

Analytical Predictions of Liquid and Air Photovoltaic/Thermal Flat-Plate Collector Performance (80-WA/Sol-3) (A) **Ap 92**

Absorptance Values

Thermal Radiation Properties of Pure H_2O Ice from 0.70 to 1.35 Micrometers (81-HT-67) (A) **O 99**

Abuaf, N. A Nonequilibrium Vapor Generation Model for Flashing Flows (81-HT-84) (A) **O 99**

Academic Careers

How to Apply for Engineering Foundation Research Grants (NR) **O 76**

Academic Research Careers

Lower Expectations Found in Today's Ph.D. Group (EN) **O 84**

Acceleration

Acceleration of Unbalanced Rotor Through the Resonance of Supporting Structure (81-APM-24) (A) **S 85**

'Brakes' of Driving Analyzed (BTR) **Ja 60**

Further Studies of the Influence of Thermal Effects on the Predicted Acceleration of Gas Turbines (81-GT-21) (A) **Je 105**

Accelerators

Superconducting Particle Accelerator (BTR) **O 60**

Acceptance Testing

A Simplified ASME Acceptance Test Procedure for Steam Turbines (80-JPGC/Pwr-15) (A) **F 117**

Accessible Region

Accessible Region and Synthesis of Robot Arms (80-DET-101) (A) **Mr 109**

Achenbach, J. D. Elastodynamic Analysis of an Edge Crack (80-WA/APM-6) (A) **Ja 100**; Transition From Brittle to Ductile Fracture for a Rapidly Propagating Crack (81-PVP-16) (A) **Ag 80**

Months are denoted by **boldface** letters:

January	**Ja**	July	**Jl**
February	**F**	August	**Ag**
March	**Mr**	September	**S**
April	**Ap**	October	**O**
May	**My**	November	**N**
June	**Je**	December	**D**

Code			
(A)	Abstract	(Ed)	Editorial
(BR)	Book Review	(EN)	Educational News
(BTR)	Briefing the Record	(ES)	Energyscope
(C)	Letters & Comments	(IF)	International Focus
		(NB)	News Brief
(CT)	Computers and Technology	(NR)	ME News Roundup
		(PS)	Personally Speaking
(CC)	Convocation Communiques	(STV)	Socio-Technical View
		(TL)	Technical Literature
(CB)	Current Books	(WW)	Washington Window
(CU)	Centennial Update		

Acid Rain

Acid Rain Studies (BTR) **Ap 58**

Researches Study Effects of Acid Rain on Marine Life (NR) **N 85**

Ackerman Linkage

Synthesis of the Four-Bar Function Generator: A Novel Approach (80-DET-26) (A) **F 119**

Acoustic Emissions

Acoustic Emission Monitoring of Steam Turbines (81-JPGC-Pwr-16) (A) **N 111**

Propagation of Elastic Pulses and Acoustic Emission in a Plate—Part 1: Theory (81-APM-4) (A) **S 84**; Part 2: Epicentral Responses (81-APM-5) (A) **S 83**; Part 3: General Responses (81-APM-6) (A) **S 83**

Quantitative Relationships for Acoustic Emission from Orthogonal Metal Cutting (80-WA/Prod-26) (A) **My 84**

Acoustic Emissions Analysis

Acoustic Emission Testing (BTR) **Ja 56**

Acoustic Excitation

The Response of a Thermal Barrier System to Accoustic Excitation in a Gas Turbine Nuclear Reactor (81-GT-16) (A) **Je 105**

Acoustic Lens

Gas-Filled Acoustic Lens (BTR) **Ap 63**

Acoustic Resonances

Noise Reduction in Heat Recovery Steam Generators (81-DET-101) (A) **D 91**

Acoustic Response

Fluid-Resonator Response to Hydrodynamic Pressure Oscillations (80-WA/NC-7) (A) **F 124**

Acoustic Signatures

A Yard Test of Acoustic Signature Inspection of Railroad Wheels (80-WA/RT-2) (A) **F 125**

Acoustical Engineering

Industrial Noise Pollution—Part 3: The Practical Function of Acoustical Engineering **S 42**

Acoustical Holography

The Promise in Acoustical Holography (BTR) **O 60**

Acoustical Insulation

Introduction to Design Specification Criteria for Acoustical Insulation (80-WA/NC-10) (A) **F 124**

Acoustical Noise

An Analytical and Experimental Study of the Acoustical Noise Produced by Machine Links (81-DET-93) (A) **D 90**

Acoustical Properties

Locally and Nonlocally Reacting Flexible Porous Layers; A Comparison of Acoustical Properties (80-WA/NC-14) (A) **F 124**

Acoustics

Numerical Techniques in Linear Duct Acoustics—A Status Report (80-WA/NC-2) (A) **F 124**

Use of Cepstra in Acoustical Signal Analysis (81-DET-138) (A) **D 92**

Acrylic Castings

Custom-Made Acrylic Castings (IF) **N 83**

Acrylic Resin

Studies of Full-Coverage Film Cooling Part 1: Cooling Effectiveness of Thermally Conductive Wall (81-GT-37) (A) **Je 107**; Part 2: Measurement of Local Heat Transfer Coefficient (81-GT-38) (A) **Je 108**

Activation Energy

The Asymptotic Structure of Counterflow Premixed Flame for Large Activation Energies (81-HT-22) (A) **O 94**

Active Damping

Protection of Continuous Structures Against Vibrations by Active Damping (81-DET-88) (A) **N 106**

Actuators

Dynamic Continuous Path Synthesis of Industrial Robots Using ADAMS Computer Program (80-DET-41) (A) **F 121**

Adamantiades, A. Role of Advanced Reactors in Electricity Generation (80-WA/NE-7) (A) **Ja 97**

Adamczyk, J. Full Potential Solution of Transonic Quasi-3-D Flow Through a Cascade Using Artificial Compressibility (81-GT-70) (A) **Je 109**

Adamczyk, J. J. Supersonic Stall Flutter of High-Speed Fans (81-GT-184) (A) **Jl 89**

Adams, G. G. A Semi-Infinite Elastic Strip Bonded to an Infinite Strip (80-WA/APM-13) (A) **Ja 100**

Adams, J. H. Evaluation of Methods for the Treatment of Mean Stress Effects on Low-Cycle Fatigue (81-GT-122) (A) **Je 114**; Nonlinear Damage Cumulation in Solution-Treated and Aged Titanium 6A1-4V (81-GT-106) (A) **Je 112**

Adams, M. L. Engine Dynamic Analysis With General Nonlinear Finite-Element Codes—Part 1: Overall Approach and Development of Bearing Damper Element (81-GT-151) (A) **Jl 85**

Adams, M. L., Jr. Freed Pump Vibration Research—Interstage Fluid Annuli (80-JPGC/Pwr-20) (A) **F 117**

ADAMS Computer Program

Dynamic Continuous Path Synthesis of Industrial Robots Using ADAMS Computer Program (80-DET-41) (A) **F 121**

Adaptive Control

Adaptive Control Optimization Grinding (80-WA/Prod-12) (A) **My 82**

Application of Adaptive Control to a Computer Controlled Process (80-WA/DSC-40) (A) **Mr 117**

Adaptive Control Scheme
An Adaptive Control Scheme for Mechanical Manipulators—Compensation of Nonlinearity and Decoupling Control (80-WA/DSC-6) (A) **Mr 114**
Adaptive Noise Cancelling
Bearing Fault Detection Using Adaptive Noise Cancelling (81-DET-7) (A) **D 88**
Additives
Theoretical Effects of Rigid Particle Additives in Noncyclic Squeeze Films (81-Lub-28) (A) **D 97**
The Use of Additives to Reduce Ash Fouling Problems in Lignite-Fired Boilers (80-JPGC/Fu-3) (A) **Je 99**
Adhesion
The Adhesion of Ice to Low Energy Solids (80-WA/HT-19) (A) **Ap 104**
Evaluation Techniques for Locomotive Performance (Fuel Economy, Adhesion, Fractive Effort) (81-RT-1) (A) **Ag 76**
Adiabatic Saturation Lines
A Model for Drying on Adiabatic Saturation Lines (80-Tex-2) (A) **F 122**
Adiabatic Wall Temperatures
Analysis for Predicting Adiabatic Wall Temperatures with Single Hole Coolant Injection into a Low Speed Crossflow (81-GT-91) (A) **Je 111**
Adjacent Structures
An Efficient Technique for the Approximate Analysis of Vibro-Impact (81-DET-16) (A) **N 104**
Adkins, C. R. Double-Wall Tube Steam Generator for Breeder Nuclear Plants (81-JPGC-NE-2) (A) **N 109**
Adkins, G. G., Jr. Spanwise Mixing in Axial-Flow Turbomachines (81-GT-57) (A) **Je 109**
Adsorption
The Adiabatic Adsorption-Desporption Characteristics of Silica Gel Beds—Part 1: Theory (80-WA/Sol-30) (A) **Ap 94**; Part 2: Curve Fits (80-WA/Sol-31) (A) **Ap 94**
Adsorption Interference
Adsorption Interference in Mixtures of Trace Contaminants Flowing Through Activated Carbon Adsorber Beds (80-ENAs-17) (A) **Mr 112**
Advanced Automation
Seeing Machines: Current Industrial Applications **N 52**
Advanced Battery Technology
'Superbattery' Under Development (BTR) **Ji 48**
Advanced Combustors
Evaluation of Advanced Combustors for Dry NO_x Suppression with Nitrogen Bearing Fuels in Utility and Industrial Gas Turbines (81-GT-125) (A) **Je 113**
Advanced Converters
The Role of Advanced Converters (80-WA/NE-6) (A) **Ja 96**
Advanced Degrees
Education Issues (C) **Ap 54**
M.S and Ph.D. Shortage Threatens Reindustrialization (EN) **F 6(**
Water Policy and Education (EN) **Ap 82**
Advanced Gas Turbines
Carbon/Carbon Components for Advanced Gas Turbine Engines (81-GT-35) (A) **Je 107**
Cooled Radial In-Flow Turbines for Advanced Gas Turbine Engines (81-GT-213) (A) **Ji 90**
Preliminary Study on Reheat Combustor for Advanced Gas Turbine (81-GT-29) (A) **Je 106**
Advanced Materials
Advanced Coating for Gas Turbine Materials (81-GT-85) (A) **Je 111**
Advanced Reactors
Role of Advanced Reactors in Electricity Generation (80-WA/NE-7) (A) **Ja 97**
Advanced Research
Outline of Plan for Advanced Research Gas Turbine (81-GT-28) (A) **Je 107**
Advanced Scramjet Combustors
Multiple-Scale Turbulence Modeling of Free Turbulent Flows (81-FE-20) (A) **S 82**
Advanced Technology
1981 Cryogenic Engineering Conference, preview (NB) **Ap 80**
Management of Information Systems (CB) **Ag 85**
Advanced Water/Steam Receivers
Conceptual Design of an Advanced Water/System Receiver for a Solar Thermal Central Power System (81-Sol-5) (A) **S 80**
Aerobic Biological Waste
The Potential Role of Aerobic Biological Waste Treatment in Regenerative Life Support Systems (81-ENAs-20) (A) **S 87**
Aero-Derived Gas Generators
Maintenance of Aero-Derived Industrial Gas Turbines (81-GT-192) (A) **Ji 89**
Aerodynamic Design
Aerodynamic Design and Testing of an Improved First-Stage Compressor Rotor for a Heavy-Duty Gas Turbine (81-GT-135) (A) **Ji 85**
Aerodynamic Drag
Grooves Reduce Aircraft Drag (BTR) **Mr 71**
Aerodynamic Effects
A Model for Drying on Adiabatic Saturation Lines (80-Tex-2) (A) **F 122**
Aerodynamic Noise Generation
Aerodynamic Noise Generation in Control Valves (80-WA/NC-8) (A) **F 124**
Aerodynamic Performance
Design and Development of the Combustor Inlet Diffuser for the NASA/GE Energy Efficient Engine (81-GT-129) (A) **Ji 84**
New Correlations of the Two-Dimensional Turbine Cascade Aerodynamic Performance (81-GT-128) (A) **Ji 84**
Aerodynamics
Aerodynamic Design and Experimental Study of Marine Gas Turbine Exhaust Volutes (81-GT-143) (A) **Ji 84**
The CIVIC—A Concept in Vortex Induced Combustion, Part 11 (81-GT-12) (A) **Je 105**
An Investigation of Axial Compressor Rotor Aerodynamics (81-GT-56) (A) **Je 108**
Time-Variant Aerodynamics of High-Turning Blade Elements (81-GT-123) (A) **Je 114**
Aeroengines
Development of a Correlated Finite Element Dynamic Model of a Complete Aero Engine (81-DET-74) (A) **O 104**
Progress in the Development of the Marine Spey, SM1A (81-GT-186) (A) **Ji 89**
Aeromechanical Design
ITI GT601-A New Approach to Vehicular Gas Turbine Power Unit Design (81-GT-152) (A) **Ji 86**
Aeropropulsion
NASA Research in Aeropropulsion (81-GT-96) (A) **Je 111; D 26**
Aerospace Engineering
KU-NASA Program Offers Research Incentives (EN) **My 70**
Aerospace Projects
Consensus of Scientists on SPS: Too Costly (BTR) **O 52**
Aerospace Structures
Aerospace Structures, Structural Dynamics, and Materials (NR) **O 72**
SDM Conference in Atlanta, preview (NR) **Mr 80**
Aerospace Vehicles
Analytical Prediction of Aerospace Vehicle Vibration Environments (81-DET-29) (A) **O 103**
Aerothermal Environments
Galileo Probe Forebody Entry Thermal Protection: Aerothermal Environments and Heat Shielding Requirements (80-ENAs-24) (A) **Mr 112**
Aerothermodynamics Equations
Application of Basic Aerothermodynamic Equations Governing Three-Dimensional Flow in Turbomachinery and Identification of Type of Equation (81-GT-142) (A) **Ji 84**
Aerts, D. J. Heat Must Go Somewhere (C) **F 46**
Afterburners
Application of Scaling in Afterburner Test and Development (81-GT-194) (A) **Ji 89**
Agarwal, S. C. Energy Conservation Through Process Modification and Control (81-PID-2) (A) **My 86**
Agarwall, M. M. Optimal Synthesis of Tolerance and Clearance in Function Generating Mechanisms—A Parametric Programming Problem (81-DET-5) (A) **O 102**
Age-Dependent Growth
The Bilinear, Modal State Equations For Age-Dependent Growth Control (80-WA/DSC-3) (A) **Mr 114**
Age Distribution
Bond Graphs of Age-Dependent Renewal (80-WA/DSC-4) (A) **Mr 114**
Aged Titanium
Nonlinear Damage Cumulation in Solution-Treated and Aged Titanium 6A1-4V (81-GT-106) (A) **Je 112**
Agency Proposals
What is an EIS? (STV) **Mr 87**
Aggarwal, K. R. Dynamics of Coupled Fluid-Structure Multiplate Systems (81-DET-145) (A) **D 91**
Aggarwal, S. K. One-Dimensional Turbulent Flame Propagation in an Air-Fuel Droplet Mixture (80-WA/HT-37) (A) **Ap 105**
Agrawal, A. K. An Analysis of the Steady-Power Natural Circulation Experiments in LMFBR Plants (80-WA/HT-41) (A) **Ap 106**
Agrawal, R. K. A Generalized Mathematical Model to Estimate Gas Turbine Starting Characteristics (81-GT-202) (A) **Ji 90**
Aguilar, F. Nonequilibrium Flashing Model for Rapid Pressure Transients (81-HT-35) (A) **O 95**
Ahlbeck, D. R. An Investigation of Impact Loads Due to Wheel Flats and Rail Joints (80-WA/RT-1) (A) **F 125**
Ahlberg, D. Particulate Ingression Past Elastomeric Linear Motion Seals (81-DE-10) (A) **Ag 78**
Ahmadian, M. A Monte Carlo Procedure for Two-Dimensional Steady Conduction at Straight Convecting Boundaries (80-WA/HT-42) (A) **Ap 106**
Ahmed, M. M. High Temperature Removal of Alkali and Particulates in Pressurized Gasification Systems (81-GT-67) (A) **Je 109**
Ahn, Y. K. Anthracite Vs Bituminous Coal Gasification (81-Pet-23) (A) **My 90**; Fuel Gas From Coal—Industrial Applications (81-IPC-Fu-3) (A) **D 101**
Ahrens, J. L. Clad Steels (C) **Ji 46**
Aid in Design
Principles of a Heuristic Optimization Technique as an Aid In Design—An Overview (80-DET-44) (A) **F 121**
Aikin, J. A. Hydraulically Expanded Tube to Tubesheet Joints (81-PVP-35) (A) **Ag 82**
Air Borne Noise
An Experiment on Pump Pressure Fluctuation, Vibration and Air Borne Noise Caused by Cavitation (81-DET-94) (A) **N 106**
Air Bubbles
A Theoretical Study on Air Bubble Motion in a Centrifugal Pump Impeller (80-WA/FE-3) (A) **My 85**
Air Conditioning
The Cabin Air Conditioning and Temperature Control System for the Boeing 767 and 757 Airplanes (80-ENAs-5) (A) **Mr 110**
Exhaust-Heat Air Conditioning (IF) **Mr 76**
Legionnaires' Disease: Air-Conditioning Systems But One Source of Infection (BTR) **Je 69**
Air Droplet
De-Entrainment on Vertical Elements in Air Droplet Cross Flow (80-WA/HT-46) (A) **Ap 106**
Air Enclosures
Numerical Study of Heat Transfer in Rectangular Air Enclosures of Aspect Ratio Less Than One (80-WA/HT-43) (A) **Ap 106**
Air-Film Cooling
Air-Film Cooling Returns to Ramjets (81-ENAs-8) (A) **S 86**
Air-Filtration
Field Experience with Gas Turbine Inlet Air Filtration (81-GT-193) (A) **Ji 89**
Air Flow
Cooling Air Flow Characteristics in Gas Turbine Components (81-GT-76) (A) **Je 110**
Air Force Tests
The Evaluation of Fuel Property Effects on Air Force Gas Turbine Engines—Program Genesis (81-GT-1) (A) **Je 104**
Air-Freon Integrated Systems
Air-Freon Integrated Environmental Conditioning System for Trainer Subsonic Aircraft (81-ENAs-33) (A) **O 100**
Air-Fuel Mixture
One-Dimensional Turbulent Flame Propagation in an Air-Fuel Droplet Mixture (80-WA/HT-37) (A) **Ap 105**
Air Heaters
A Model for the Analysis of Air Heater Vibrations (81-

DET-34) (A) O 103
Air-Heating Collectors
Parametric Analysis of Louvered Air-Heating Solar Collectors (80-WA/Sol-38) (A) Ap 95
Air Intake
Refrigerating Gas Turbine Compressor Air Intake (81-GT-176) (A) Jl 88
Air Intrusion Effects
Free and Forced Convective Effects on Air-Permeable Insulation Systems (81-HT-47) (A) O 97
Air Leakage
Evaluation of a Proposed Modification of the F-Chart Method to Include Collector Array Air Leakage (80-WA/Sol-12) (A) Ap 93
Air Noise
Experimental Investigation into the Physics of Arc-Air Metal Gouging Noise Generation (80-WA/NC-12) (A) F 124
Air Pollution
Don't Cold-Shoulder Coal (C) My 42
Performance and Air Pollutant Emissions of an Experimental Water/Residual Oil Emulsion Burner in a Commercial Boiler (80-WA/APC-1) (A) Ap 102
Air Pollution Control
Advances in Environmental Control Technology for Coal-Fired Power Plants (81-JPGC-APC-2) (A) D 100
Boosting Precipitator Performance (ES) F 23
Characterization of Dust and Emissions from a Faconite Bulk Handling Facility (80-WA/APC-2) (A) Ap 102
A Comparison of the Second and Third Editions of the ASME Recommended Guide for the Prediction of the Dispersion of Airborne Effluents (80-WA/APC-3) (A) Ap 102
EEI Clean Air Act Amendments Affecting Stationary Sources (81-JPGC-APC-3) (A) D 100
Fires in Electrostatic Precipitators-Survey Results, Discussion and Recommendations (81-JPGC-APC-1) (A) D 100
Performance and Air Pollutant Emissions of an Experimental Water/Residual Oil Emulsion Burner in a Commercial Boiler (80-WA/APC-1) (A) Ap 102
Recent Pilot-Scale Development of a Low-NO_x, "Air-on-Wall" Corner-Fired Combustion System (81-JPGC-APC-4) (A) D 100
Air Quality
A Comparison of the Second and Third Editions of the ASME Recommended Guide for the Prediction of the Dispersion of Airborne Effluents (80-WA/APC-3) (A) Ap 102
Pollution Problem in Energy-Tight Buildings (BTR) Ja 58
Air Quality Control
Integrated Environmental Control for Coal-Fired Power Plants (NR) Ap 68
Air Supply Systems
Air Supply System Bite for Boeing 767 Airplane (81-ENAs-7) (A) S 86
Air Turbines
Measurement of the Influence of Flow Distortions on the Blade Vibration Amplitude in an Air Turbine (81-DET-135) (A) D 91
Air-Water Interface
Comparison of Profiles and Fluxes of Heat and Momentum Above and Below an Air-Water Interface (80-WA/HT-68) (A) Ap 107
Airblast Atomizers
Application of Airblast Atomizing Fuel Nozzles to Two Prototype Industrial Gas Turbines (81-GT-82) (A) Je 110
Airborne Effluents
A Comparison of the Second and Third Editions of the ASME Recommended Guide for the Prediction of the Dispersion of Airborne Effluents (80-WA/APC-3) (A) Ap 102
Airbreathing Propulsion Systems
Nuclear Blast Response of Airbreathing Propulsion Systems: Laboratory Measurements with an Operational J-85-5 Turbojet Engine (81-GT-164) (A) Jl 87
Aircraft
Advanced Alloy Improves Engine Disks (BTR) Jl 53
Aircraft of the Future (NB) O 76
Air-Freon Integrated Environmental Conditioning System for Trainer Subsonic Aircraft (81-ENAs-33) (A) O 100
Design Analysis of High Temperature Transparent Windshields for High Performance Aircraft (81-ENAs-5) (A) S 85
Design Challenges of High Performance Aircraft POD EOCM Cooling Systems (81-ENAs-6) (A) O 100
Digital Control Makes a Commercial Debut on the JT9D Engine (81-GT-199) (A) Jl 89
Environmental Control System Concept Study for a Navy V/STOL Aircraft (80-ENAs-47) (A) Mr 114
Establishing Cruise-Engine Cycle Payoffs for a Supersonic VSTOL Aircraft (81-GT-100) (A) Je 112
Evaluation of Sealing Systems for Nonflammable Aircraft Hydraulic Fluids (81-Lub-51) (A) D 99
Flying Flaw Detector (BTR) Jl 56
A Generalized Mathematical Model to Estimate Gas Turbine Starting Characteristics (81-GT-202) (A) Jl 90
Life Cycle Cost Before, During and After the Design of Aircraft Propulsion Systems (81-GT-111) (A) Je 112
Liquefied-Methane-Powered Airplane (BTR) D 58
A New APU for Medium Place Aircraft Environmental Control Systems (81-ENAs-1) (A) S 85
OK to Fly (ES) My 19
Optimizing the Performance of the P-3C Environmental Control System (80-ENAs-6) (A) Mr 111
Prediction of Aircraft Interior Noise Using the Statistical Energy Analysis Method (81-DET-102) (A) D 90
A Study of External Fuel Vaporization (81-GT-156) (A) Jl 86
Aircraft Electronics
Using Microprocessors in Fault Monitoring of Aircraft Electronics (81-GT-138) (A) Jl 86
Aircraft Engines
Applications of the Semi-Loof Thin Shell Element to the Analysis of Aircraft Engine Structures (81-GT-104) (A) Je 112
The Evaluation of Fuel Property Effects on Air Force Gas Turbine Engines—Program Genesis (81-GT-1) (a) Je 104
Fiber Optic Probes Monitor Engine Condition Ja 37
Forces on Turbine Blades Studied (EN) Mr 83
A UK View on Future Fuels (81-GT-87) (A) Je 111
Aircraft Fuel Flowmeters
Design and Testing of a New Double Labyrinth Seal (81-Lub-58) (A) D 99
Aircraft Propulsion Systems
NASA Research in Aeropropulsion (81-GT-96) (A) Je 111; D 26
Aircraft Turbine Engines
Impacts of Broadened-Specification Fuels on Aircraft Turbine Engine Combustors (81-GT-2) (A) Je 104
Airflow
Numerical Simulation of Mesoscale Atmospheric Circulations Over Lake Michigan (80-WA/HT-65) (A) My 85
Airfoils
Development of a Large-Scale Wind Tunnel for the Simulation of Turbomachinery Airfoil Boundary Layers (81-GT-6) (A) Je 104
Transonic Flow Computations in Cascades Using Finite Element Method (81-GT-4) (A) Je 104
Airframe Design Studies
Engine Cycle Selection for Advanced Technology Engine Studies (81-GT-191) (A) Jl 89
Airline Maintenance
Commercial Engine Logistics Cost Projections—A Dynamic and Flexible Approach (81-GT-114) (A) Je 113
Airlines
Fuel-Saving Engine Kits (ES) Je 25
Airplane Projects
Gossamer Odyssey: The Triumph of Human-Powered Flight (CB) Ag 84
Airplane Subsystems
Air Supply System Bite for Boeing 767 Airplane (81-ENAs-7) (A) S 86
Airships
National Design Engineering Show/Conference, review (NR) Je 74
Akay, H. U. Transonic Flow Computations in Cascades Using Finite Element Method (81-GT-4) (A) Je 104
AKWAS
The Engineer as Information Manager (C) F 46
Al Dabbagh, N. A. The Influence of Premixed Combustion Flame Stabilizer Geometry on Flame Stability and Emissions (81-GT-26) (A) Je 106
Alabama Energy
Alabama Energy Model (ES) My 18
Albrecht, R. R. Analytical and Experimental Investigation of Magnetic Support Systems. Part 11: Experimental Investigation (81-Lub-32) (A) D 98
Alcohol
Experiment with Diesohol (BTR) Jl 51
Alcohol Fuels
Alcohol Fuel Vehicle Testing (ES) Ja 21
Alcohol Fuels Data Base Needs Input (BTR) Ap 61
Alcohol Fuels Pamphlet Available (NB) Mr 81
The Future with Alcohol Fuels (ES) S 24
Modified Brayton Cycles Utilizing Alcohol Fuels (81-GT-103) (A) Je 112
Wanted—Ethhanol Entrepreneurs (ES) Ap 28
Alcohol Plants
Gasohol—The Replaceable Fuel Source (IF) Ap 66
Alderton, D. *(Author)* The Batsford Guide to the Industrial Archaeology of East Anglia: Cambridgeshire, Essex, Norfolk, Suffolk (CB) Mr 119
Alexander, A. Interactive Multi-Mode Blade Impact Analysis (81-GT-79) (A) Je 110
Alff, R. K. Economics of Heavy Fuels in Gas Turbines and Combined Cycles (81-GT-45) (A) Je 107
Alfred Nobel Prize
Mettallurgist Honored for Outstanding Paper (NR) Ap 73
Algebraic Motions
Kinematic Mappings Part 1: Classification of Algebraic Motions in the Plane (80-DET-16) (A) F 119; Part 2: Rational Algebraic Motions in the Plane (80-DET-17) (A) F 119
Algorithms
Algorithms Could Automate Cancer Diagnosis (BTR) D 62
Ali, C. L. An Experimental Investigation of Free Convection About a Heated Inclined Surface in a Porous Medium (81-HT-85) (A) O 99
Ali, M. W. Mechanically Bonded Radiators for Locomotive Reliability (80-WA/RT-4) (A) F 125
Alkali
High Temperature Removal of Alkali and Particulates in Pressurized Gasification Systems (81-GT-67) (A) Je 109
Alkali Salts
Deposition—Hot Corrosion in Gas Turbine Engines (81-GT-153) (A) Jl 86
Allam, T. A. A Mixed Gray-Gas Model to Calculate Water Vapor Standard Emissivities (81-HT-63) (A) O 97
Allan, A. B. Road Vehicle Train Response to Random Road Surface Undulations (80-WA/DSC-1) (A) Mr 114
Allen, J. M. Effect of Temperature Dependent Mechanical Properties on Thermal Stress in Cooled Turbine Blades (81-GT-105) (A) Je 112
Allen, R. R. Longitudinal Instability in Braked Landing Gear (80-WA/DSC-12) (A) Mr 115
Alline, R. R. Connection Force Analysis of Mechanisms Described by Explicit Equations of Motion in Generalized Coordinates (80-DET-75) (A) Mr 108
Alloca, R. E. Dormavac—Long-Term Storage of Perishable Commodites (80-ENAs-1) (A) Mr 111
Alloys
Advanced Alloy Improves Engine Disks (BTR) Jl 53
The Effect of Product Form Upon Fatigue-Crack Growth Behavior in Alloy 718 (81-Mat-1) (A) O 102
Hardenable Spring Alloys (IF) S 59
Al-Sharif, M. M. An Integral Analysis for Incompressible Turbulent Thermal Boundary Layer Flow: Nonuniform Wall Heating (80-WA/HT-57) (A) My 84
Alter, H. *(author)* Solid Waste Conversion to Energy: Current European and U.S. Practice (CB) Mr 119
Alternating Loads
Plastic Strain Concentrations in Perforated Structures Subjected to Alternating Loads (81-PVP-22) (A) Ag 80
Alternative Electric Generation
Rural Energy Needs (ES) Mr 37

Alternative Energy
Alternative Energy Technologies and Their Impact on Performance Test Codes (80-WA/PtC-2) (A) **Ap 101**
Energy Alternatives for Third World Nations (EN) **My 70**
Expanded Socio-Technical Outlook Urged (C) **Ap 55**
Alternative Energy Sources
Support for S-T Stance (C) **Mr 85**
Alternative Fuel Source
Sourcebook on the Production of Electricity from Geothermal Energy (CB) **O 107**
Alternative Fuels
Alternative Fuels Study (IF) **Je 73**
Alternative Solid Fuel
Low-Btu Gas From an Environmentally Clean Pellet Fuel (80-WA/Fu-2) (A) **F 126**
Alternative Technologies
Unconventional Processes for Food Regeneration in Space: An Overview (81-ENAs-35) (A) **S 87**
Altitude Relighting
Some Factors Affecting Altitude Relighting Performance of Turbojet Engine Combustor (81-GT-49) (A) **Je 108**
Aluminum
Aluminum a 'Shoe-In' at Racetrack (BTR) **My 48**
Creep of 2618 Aluminum Under Side-Steps of Tension and Torsion and Stress Reversal Predicted by a Viscous-Viscoelastic Model (81-APM-8) (A) **S 84**
Evaluation of Polymers as Lubricants in the Extrusion of Aluminum (81-Lub-21) (A) **D 97**
Aluminum Alloy
Self-Consistent Determination of Time-Dependent Behavior of Metals (81-APM-11) (A) **S 84**
Superplastic Aluminum Alloy (IF) **F 61**
Aluminum Ladders
Simple Engineering Homework Negates Alleged Defect in Ladder Accident Case (80-WA/DE-12) (A) **Ap 101**
Alumni
Living with Technology: Issues at Mid-Career (CB) **Ag 85**
Alvin, M. A. High Temperature Removal of Alkali and Particulates in Pressurized Gasification Systems (81-GT-67) (A) **Je 109**
Amazon Plants
Botanists to Save Plants Threatened by Bulldozers (BTR) **Ag 47**
American Association of Engineering Societies
AAES Expands (NB) **N 91**
American Automatic Control Council
AACC to Replace JACC in '82 (IR) **Ap 73**
American Equipment
Europeans and Americans Confer at ASHRAE Meeting (NR) **Ap 78**
American Industry
INFO/MFG Exposition and Conference, review (NR) **Mr 78**
American Overseas Jobs
Taxing Americans Overseas (WW) **Jl 76**
American Society of Mechanical Engineers
Advances in Life Prediction Methods **Mr 98**
Air Pollution Control Symposium, preview (NR) **Je 71**
1981 Annual Conference on Engineering in Medicine and Biology, preview (NR) **Jl 70**
The 27th Annual Reliability and Maintainability Symposium, preview (NR) **Je 71**
The ASME Auxiliary **F 106; Mr 100**
ASME Boiler & Pressure Vessel Code **F 130; Ap 112; Je 118; Ag 89; O 109; N 122; D 105**
ASME Centennial Medallion Recipients **Je 96**
ASME Council Action on Ethics Case (NR) **Jl 70**
ASME Donates Faber Steam Engine to Smithsonian **Mr 98**
ASME Energetics Division Renamed **F 108**
ASME and Japanese Society to Co-Host '81 Textile Conference (NR) **S 68**
1981-1982 ASME Officers Elected **Je 84**
ASME Petroleum Conference, preview (NR) **Jl 70**
1981 ASME Regional Student Conference Reports **O 86**
ASME Starts a Speakers Bureau **F 106**
ASME Student Section News **Ap 84**
The 1980 ASME Winter Annual Meeting Theme: The 21st Century and Mechanical Engineering **F 74**
AMSE's Boiler and Pressure Vessel Code as an International Standard **Ag 89**
Beardsley to Succeed Jaklitsch as ASME Editor (NR) **O 75**
Blood Heat Exchanger Named Landmark **Je 81**
Board of Governors **Je 84**
Burke Nelson Named New Executive Director of ASME (NR) **Ag 61**
Cab-in-Front Articulated Locomotive Receives Landmark Status (NR) **Jl 68**
Can ASME Take Consensus Stands? (C) **My 43**
Centinnial Profile **Je 22; F 24; Mr 38**
Center Stage in the Decade of the Engineer (Ed) **D 17**
Challenges For Sections: Are You Prepared? (Ed) **Mr 35**
Codes and Standards **Je 104; F 129; Mr 121; Ap 110; My 94; Je 117; Jl 93; Ag 87; S 90; O 108; N 118; D 103**
Congress of Theoretical and Applied Mechanics, review (NR) **Je 70**
Conference on Wear of Materials, Probes Metals, Polymers, Ceramics, and Tool Wear, review (NR) **Je 78**
'81 Design Engineering Show/Conference in Chicago **Mr 98**
1980 Eastern Design Engineering Conference, review **Je 82**
At '81 ETCE **Mr 88**
Executive Director Search (NR) **F 63**
The "Expanding Universe" (NR) **O 74**
Food, Drug, and Beverage Equipment Committee Seeks Division Status **Mr 96**
Fulton Drawings Travel Museum Circuit **Mr 93**
Gaither Elected 100th President of ASME **Je 84**
A Glance at Three '81 WAM Sessions (NR) **O 73**
Hazardous Wastes Conference (NR) **Ap 78**
A History of the Columbus Section of ASME: 1920-1980 (CB) **Ag 84**
Holt Caterpillar Tractor Designated International Landmark (NR) **Je 82**
Hydro-Power Plant and Shot Tower Named Landmarks (NB) **Ag 64**
Index to Publications—Available to Members (NR) **My 60**
1980 Industrial Power Conference, review **Je 78**
Industrial Power for the 80s: The Turn to Coal **Je 78**
Industrial Power's New Look (NR) **Jl 67**
The Intangible Benefits (Ed) **F 21**
Interested in Contributing to a Water Technology Handbook? **Mr 97**
International Gas Turbine Conference, preview **Je 89**
26th International Gas Turbine Conferrence and Exhibit, preview **Mr 4**
The International Scene: Benefits and Responsibilities (Ed) **My 17**
The ISO-ASME Orifice Coefficient Equation **Jl 44**
Join a Waste Processing Plant Tour and Seminar (NR) **S 68**
Joint ASLE/ASME Lubrication Conference, review (NR) **D 72**
Joint ASME/ASCE Mechanics Conference, review (NR) **S 62**
Joint Mechanics Conference, preview (NR) **Ap 72**
Joint PVP, Materials, Nuclear, Solar Conference, preview (NR) **Ap 72**
1981 Joint Railroad Conference, preview (NR) **Mr 80**
Letter from the Editor (C) **Je 62**
Looking Back, Yet Forward (Ed) **Je 23**
Lubrication Conference-Southern Style, preview (NR) **S 68**
Mechanical Engineering: A Century of Progress (CB) **Je 116**
Milwaukee Hosts Heat Transfer Conference, preview (NR) **Je 80**
Much Ado About CAD/CAM and Robotics (NR) **S 68**
National Design Engineering Show/Conference, review (NR) **Je 74**
New Leadership and the Future (Ed) **Ag 19**
The New National Mood and ASME (Ed) **S 23**
New Orleans to Host Fifth Annual ETCE (NR) **D 76**
Nominees Sought for Pi Tau Sigma/ASME Awards (NR) **D 74**
The Only True Retirement is That of the Heart... (NR) **S 60**
Plaque Piece Praised (C) **S 49**
"Power—Gateway to Progress" at '81 JPGC (NR) **Ag 82**
Praise for Profiles (C) **F 46**
Revitalizing America—An ASME Challenge and Opportunity (Ed) **Jl 17**
Rogers Finch Resigns as ASME Director **Je 81**
Section and Region News **Je 91; F 109; Mr 100;**
Sixteenth Intersociety Energy Conversion Engineering Conference, preview (NR) **Je 80**
Society News on the Move **Mr 95**
Society Receives Generous Gift from Honda Motors **Je 89**
The Solar Alternative: Status and Prospects (NR) **Jl 62**
Southern Arizona Honors 50-Yr Member **Mr 98**
Space Available at International Computer Exhibit (NR) **N 86**
A Staff Report: The Forum **F 74**
Tech Editor Sought for Applied Mechanics Journal (NR) **N 90**
Technical Divisions: Are You Doing Enough For Industry? (Ed) **Ap 27**
Technology's the Answer, But That's Not the Question **S 38**
The Third International Conference on Wear of Materials, preview (NR) **Je 71**
Turning Points (Ed) **Je 19**
Vice Presidents of Regions and Policy Boards **Je 86**
'81 WAM Theme—Engineering for Energy and the Environment (NR) **S 67**
Wanted: Proposals and Supporters for ASME National Officers **Mr 96; (NR) Ap 72**
The Washington Scene: Current and Future (Ed) **O 25**
"WATTec" to Feature Energy-Related Sessions (NR) **S 68**
We Made It—100,000 Members by 1980! (PS) **F 72**
Wear of Materials Conference in San Francisco, preview (NR) **F 65**
What is ASME's National Agenda System? **Mr 94**
Whither ASME? (STV) **O 83**
The Who, What, and Why of Society Awards **Mr 95**
Wide-Ranging Solar Conference in Reno **Mr 96**
Winter Annual Meeting Business Meeting **F 104**
Winter Annual Meeting Honors Assembly **F 90**
Winter Annual Meeting Honors and Awards **F 93**
Winter Annual Meeting Luncheons **F 83**
Winter Annual Meeting Special Lectures **F 77**
Winter Annual Meeting Technical Sessions **F 95**
"World Without End:" A Journey in Sound (NR) **O 74**
The Year Ahead with President Gaither **Jl 20**
American Work Force
Thoughts on Freedom (C) **Je 48**
America's Technology Status
America's Technology Slip (CB) **Je 116**
Amero, R. C. ANSI B 133.7 Survey of Gas Turbine Synthetic Liquid Fuels (81-JPGC-GT-8) (A) **D 95**
Amitay, G. Adaptive Control Optimization of Grinding (80-WA/Prod-12) (A) **My 82**
Ammonia
Ammonia Bottoming Cycle Development at Electricité de France for Nuclear Power Plants (81-GT-178) (A) **Jl 88**
The Effect of Ammonia and Oxygen Levels on the Corrosion Characteristics and Copper Release Rates of Copper Base Condenser Tube Alloys Under Simulated Steam-Side Conditions (81-JPGC-Pwr-9) (A) **N 111**
Ammonia Boiler Subsystem
Shuttle Orbiter Ammonia Boiler Subsystem (81-ENAs-44) (A) **O 101**
Ammonia Bottoming Cycle
Power Generation From a 770°C Heat Source by Means of a Main Steam Cycle, a Topping Closed Gas Cycle and an Ammonia Bottoming Cycle (81-GT-18) (A) **Je 105**
Ammonia Service
Failure of a High-Pressure Vessel in Ammonia Service (81-PVP-8) (A) **Ag 79**
Amos, J. C. U. S. Large Leak Sodium-Water Reaction Test Program (80-WA/NE-3) (A) **Je 98**
Analytic Tool
Steady-State Digital Computer Model for Supercritical Steam Generators (81-JPGC-Pwr-4) (A) **N 110**
Analytical Mechanics
Dynamic Response of an Electric Motor-Linkage System During Startup (80-DET-54) (A) **Mr 106**
Analytical Synthesis
Analytical Synthesis of Four-Bar Function Generators to Match Prescribed Differential Coefficients (80-DET-33) (A) **F 120**

Anatomical Joints
A Technique for Kinematic Modeling of Anatomical Joints (80-DET-84) (A) **Mr 109**
Anderson, C. A. Boussinesq-Papkovich Functions for Creep Around a Spherical Cavity or a Rigid Inclusion in a Gravity-Loaded Half Space (81-APM-30) (A) **S 85**
Anderson, D. N. Ultra-Lean Combustion at High Inlet Temperatures (81-GT-44) (A) **Je 107**
Anderson, D. O. Elements of an Optimization Software Library for Engineering Design (80-WA/DSC-41) (A) **Mr 117**
Anderson, G. A. Attributes of Light Wall Copper-Nickel Condenser Tubing (81-JPGC-Pwr-10) (A) **N 111**
Anderson, G. R. An Investigation of the Mechanics and Noise Associated with Coal Cutting (80-WA/NC-1) (A) **F 123**
Anderson, L. The Design and Performance of a Sturdy Industrial Combustion Chamber for a 14-MW Gas Turbine (81-GT-48) (A) **Je 108**
Anderson, L. L. *(editor)* Fuels from Waste (CB) **N 116**
Anderson, N. E. Design of Spur Gears for Improved Efficiency (81-DE-4) (A) **Ag 78**
Anderson, R. R. Sunshade/Radiative Cooler for IRAS Infrared Astronomical Satellite (81-ENAs-3) (A) **S 86**
Anderson, S. J. Development of a Small-Scale Catalytic Gas Turbine Combustor (81-GT-43) (A) **Je 108**
Andreopoulos, J. Measurements in a Pipe Flow Issuing Perpendicularly into a Cross Stream (80-WA/HT-24) (A) **Ap 104**
Andresen, J. Evaluation Techniques for Locomotive Performance (Fuel Economy, Adhesion, Tractive Effort) (81-RT-1) (A) **Ag 76**
Andrews, G. E. The Influence of Premixed Combustion Flame Stabilizer Geometry on Flame Stability and Emissions (81-GT-26) (A) **Je 106**
Andrews, R. W., Jr. Education Issues (C) **Ap 55**
Andriano, M. Air-Freon Integrated Environmental Conditioning System for Trainer Subsonic Aircraft (81-ENAs-33) (A) **O 100**
Andry, A. N., Jr. Some Results on the Nature of Eigenvalues of Discrete Damped Linear Systems (80-WA/APM-19) (A) **Ja 101**
Angeles, J. Suspension System Synthesis for Mass Transport Vehicles with Prescribed Dynamical Behavior (81-DET-44) (A) **O 104**
Angelino, A. J. Against Mumbo Jumbo (C) **Jl 46**

Angular Motion Compensator
Kinematic Synthesis of an Adjustable Six-Bar Angular-Motion Compensator (80-DET-10) (A) **F 118**

Animal Experiments
Carbon Dioxide Effects on Submarines (80-ENAs-32) (A) **Mr 113**

Animal Holding Facility
The Development of a Space Shuttle Research Animal Holding Facility (80-ENAs-39) (A) **Mr 113**

Animals
Do Animals Have Rights? **F 108**

Anisotropic Reflection
A Best Estimate Radiation Heat Transfer Model Developed for TRAC-BD1 (81-HT-66) (A) **O 98**

Anisotropic Viscoplasticity
A Theory of Multiaxial Anisotropic Viscoplasticity (81-APM-21) (A) **S 85**

ANMC Conference
D.C. To Host Annual Metric Conference, preview (NR) **F 64**

Annular Air Flow
Turbulent Pressure-Velocity Measurements in a Fully Developed Concentric Annular Air Flow (81-DET-23) (A) **D 89**

Annular Passage
Flow Instability Due to a Diameter Reduction of Limited Length in a Long Annular Passage (81-DET-26) (A) **N 104**

Annulus-Wall Boundary Layer
Turbulence Characteristics in the Annulus-Wall Boundary Layer and Wake Mixing Region of a Compressor Rotor Exit (81-GT-148) (A) **Jl 85**
Anson, D. Conceptual Design of a Coal Fired Utility Boiler for Cycling Duty (80-JPGC/Pwr-16) (A) **F 117**; The Potential for Use of Peat Blends with Coal for Electric Power Generation (81-JPGC-Fu-2) (A) **D 93**

Antennas
Measuring Antenna Efficiency: A Lunar Approach (BTR) **My 46**

Anthracite Coal
Anthracite Vs Bituminous Coal Gasification (81-Pet-23) (A) **My 90**

Anti-Exposure Suits
Anti-Exposure Suits in the VP Community (80-ENAs-43) (A) **Mr 113**

Anti-Nuclear Opinions
Storm Over S-T View (C) **Ja 52**

Anti-Nuclear People
Nuclear Name Calling (C) **S 49**

Antifriction Bearings
Optimum Friction Damping of a Flexible Rotor (81-GT-156) (A) **Jl 86**

Antifriction Devices
Joint ASLE/ASME Lubrication Conference, review (NR) **D 72**
Aoki, C. IM 2000 Marine Gas Turbine-Design, Development and Testing (81-GT-196) (A) **Jl 89**

Appalachian Coal
The Appalachian Connection (ES) **My 18**

Appendages
Dynamics of a Deploying Orbiting Beam-Type Appendage Undergoing Librations (81-DET-63) (A) **N 106**
Applegate, W. F. Centennial Profiles "Tops" (C) **Ap 55**

Applied Mechanics
Acceleration of Unbalanced Rotor Through the Resonance of Supporting Structure (81-APM-24) (A) **S 85**
An Application of Mixture Theory to Particulate Sedimentation (80-WA/APM-1) (A) **Ja 99**
An Application of the Poincare Map to the Stability of Nonlinear Normal Modes (80-Wa/APM-4) (A) **Ja 99**
Approximate Description of Crack Kinking and Curving (81-APM-22) (A) **S 85**
Approximate Laplace Transform Inversion in Dynamic Viscoelasticity (80-WA/APM-29) (A) **Ja 102**
Asymptotic Integration Methods Applied to Rotating Beams (80-WA/APM-32) (A) **Ja 102**
Boussinesq-Papkovich Functions for Creep Around a Spherical Cavity or a Rigid Inclusion in a Gravity-Loaded Half Space (81-APM-30) (A) **S 85**
On Branched, Interface Cracks (81-APM-20) (A) **S 84**
On the Characterization of Strain-Hardening in Plasticity (81-APM-26) (A) **S 85**
Crack Path Prediction for a Kinked Crack in the Neighborhood of a Circular Inclusion in an Infinite Medium (81-APM-31) (A) **S 85**
Creep of 2618 Aluminum Under Side-Steps of Tension and Torsion and Stress Reversal Predicted by a Viscous-Viscoelastic Model (81-APM-8) (A) **S 84**
Creep and Creep Recovery of 304 Stainless Steel Under Combined Stress With a Representation by a Viscous-Viscoelastic Model (80-WA/APM-10) (A) **Ja 100**
A Dislocation Model for Fatigue Crack Initiation (81-APM-3) (A) **S 83**
Drawing of Tubes (80-WA/APM-17) (A) **Ja 100**
Droplet Dynamics in Creeping Flows (81-APM-29) (A) **S 85**
Elastodynamic Analysis of an Edge Crack (80-WA/APM-6) (A) **Ja 100**
Elastostatic Far-Field Behavior in a Layered Half Space Under Surface Pressure (80-WA/APM-7) (A) **Ja 100**
Experiments on Chaotic Motions of a Forced Nonlinear Oscillator: Strange Attractors (80-WA/APM-2) (A) **Ja 99**
Finite-Element Solution of Elastic-Plastic Boundary-Value Problems (81-APM-17) (A) **S 84**
The Flow of a Non-Newtonian Fluid Past Projections and Depressions (80-WA/APM-8) (A) **Ja 100**
Fracture Criteria of Fibrous Laminated Composites Under In-Plane Multidirectional Loading (80-WA/APM-9) (A) **Ja 100**
Harmonic Wave Propagation in a Periodically Layered; Infinite Elastic Body: Plain Strain, Numerical Results (80-WA/APM-3) (A) **Ja 99**
On the Influence of a Rigid Circular Inclusion on the Twisting and Shearing of a Shallow Spherical Shell (80-WA/APM-5) (A) **Ja 99**
An Isoparametric Finite Element With Nodal Derivatives (81-APM-1) (A) **S 83**
A Model to Estimate Forces on Conical Penetrators Into Dry Porous Rock (81-APM-15) (A) **S 84**
Modeling of Nonholonnomic Dynamic Systems With Applications (81-APM-12) (A) **S 84**
Multiple Scattering of Waves in Irregularly Laminated Composites (80-WA/APM-22) (A) **Ja 102**
Nondestructive Evaluation of the J and M Integrals (81-APM-2) (A) **S 83**
Nonlinear Corrections for Edge Bending of Shells (80-WA/APM-15) (A) **Ja 100**
Nonlinear Response of an Elastic Cylindrical Shell to a Transient Acoustic Wave (81-APM-10) (A) **S 84**
A Nonlinear Theory of Viscoelasticity for Application to Elastomers (80-WA/APM-18) (A) **Ja 100**
A No-Slip Edge Crack on a Bimaterial Interface (80-WA/APM-14) (A) **Ja 100**
Parametric Resonance Oscillations of Flexible Slender Cylinders in Harmonically Perturbed Axial Flow—Part 1: Theory (80-WA/APM-30) (A) **Ja 101**
Parametric Resonance Oscillations of Flexible Slender Cylinders in Harmonically Perturbed Axial Flow—Part 2: Experiments (80-WA/APM-31) (A) **Ja 102**
Propagation of Elastic Pulses and Acoustic Emission in a Plate—Part 1: Theory (81-APM-4) (A) **S 84**; Part 2: Epicentral Responses (81-APM-5) (A) **S 83**; Part 3: General Responses (81-APM-6) (A) **S 83**
The Rate (Time)-Dependent Behavior of Ti-7 Al-2 Cb-1 Ta Titanium Alloy at Room Temperature Under Quasi-Static Monotonic and Cyclic Loading (81-APM-7) (A) **S 84**
Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: P and SV Motion (81-APM-16) (A) **S 84**
Resolution of a Core Problem in Wound Rolls (80-WA/APM-23) (A) **Ja 102**
Rotating Compressible Flow Over the Edge of a Finite Disk (81-APM-19) (A) **S 84**
Self-Consistent Determination of Time-Dependent Behavior of Metals (81-APM-11) (A) **S 84**
A Semi-Infinite Elastic Strip Bonded to an Infinite Strip (80-WA/APM-13) (A) **Ja 100**
Some Results on the Nature of Eigenvalues of Discrete Damped Linear Systems (80-WA/APM-19) (A) **Ja 101**
On the Stability of a Composite Beam With Initial Stress to Moving Loads (81-APM-25) (A) **S 85**
Stability Considerations in Thermoelastic Contact (80-WA/APM-25) (A) **Ja 102**
Stability of Developing Flow in a Pipe—Nonparallel Effects (81-APM-13) (A) **S 84**
On the Stability of Equilibrium Paths Associated With Autonomous Systems (81-APM-9) (A) **S 84**
Stress Analysis of a Penny-Shaped Crack Located Between Two Spherical Cavities in an Infinite Solid (80-WA/APM-12) (A) **Ja 100**
The Study of Sluice Gate and Sharp-Crested Weir Through Hydrograph Transformations (81-APM-23) (A) **S 85**
Tech Editor Sought for Applied Mechanics Journal (NR) **N 90**
Theoretical and Experimental Investigation of Stress Waves at a Junction of Three Bars (81-APM-16) (A) **S 84**
A Theory of Cell-To-Cell Mapping Dynamical Systems (80-WA/APM-26) (A) **Ja 101**
A Theory of Multiaxial Anisotropic Viscoplasticity (81-APM-21) (A) **S 85**
A Thermomechanical Example of Auto-Oscillation (80-WA/APM-21) (A) **Ja 101**
On Torsion and Transverse Flexure of Orthotropic Elastic Plates (80-WA/APM-16) (A) **Ja 100**
On the Unbonded Contact Between Plates and Layered Cylinders (80-WA/APM-11) (A) **Ja 100**
On The Uniqueness and Stability of Endochronic Theory (80-WA/APM-24) (A) **Ja 101**
An Unravelling Algorithm for Global Analysis of Dynamical Systems: An Application of Cell-to-Cell Mappings (80-WA/APM-27) (A) **Ja 101**
Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) (A) **S 85**
Vibrations of Rectangular Plates With Nonuniform Elastic Edge Supports (80-WA/APM-28) (A) **Ja 102**

Vibrations of Solid Cylinders (80-WA/APM-20) (A) **Ja 101**

Applied Research Proposals
NSF Expands Research Program for Small Firms (NR) **F 63**

Applied Science Research
NSF Plans Shift from Basic Science To Engineering (NR) **Ja 71**

Appropriations
The Budget Blooms (WW) **My 74**

Aquatic Ecosystem
Stochastic Properties of Compartment Models (80-WA/DSC-37) (A) **Mr 117**

Aquatic Plants
Wetlands May Clean Geothermal Water (BTR) **Jl 50**

Aqueous Solutions
The Effect of Solute Polarization on the Freezing and Thawing of Aqueous Solutions (80-WA/HT-21) (A) **Ap 104**

Aquifers
Aquifers Store Waste Energy (BTR) **Mr 70**

Aquilina, J. Make Grad School More Attractive (C) **Jl 46**

Arabian Gulf
Fate and Threat of Oil Slicks in the Arabian Gulf (80-ENAs-10) (A) **Mr 111**

Arbitrary Forces
Non-Linear Transient Analysis of Plates by Mixed Elements (81-DET-146) (A) **D 92**

Arbitrary Shaped Solids
An Integral Equation Approach to Radiative Heat Transfer Between Heat Conducting Solids of Arbitrary Shape (81-HT-73) (A) **O 98**

Arc Noise
Experimental Investigation into the Physics of Arc-Air Metal Gouging Noise Generation (80-WA/NC-12) (A) **F 124**

Architectural Concepts
A Simplified Computer-Assisted Energy Calculation Procedure for the Evaluation of Building Architectural Concepts (80-WA/DSC-42) (A) **MR 117**

Armor, A. F. Acoustic Emission Monitoring of Steam Turbines (81-JPGC-Pwr-16) (A) **N 111**

Armoring Wires
Torque and Stress Balanced Design of Helically Armored Cables (80-WA/OCE-1) (A) **Mr 118**

Armstead, H. *(author)* Geothermal Energy: Its Past, Present and Future Contributions to the Energy Needs of Man (CB) **F 128**

Arndt, G. Flexible Manufacturing Systems, Metal Cutting and Material Conservation (80-WA/Prod-6) (A) **My 82**

Arnold, H. S., Jr. Portable Computerized Power Plant Equipment Testing **Mr 58**

Aronov, V. Experimental Investigation of the Effect of System Rigidity on Wear and Friction-Induced Vibrations (81-Lub-3) (A) **D 95**

Arresters
Gentle Arrester (BTR) **Jl 57**

Arteries
Compliant Transducer Measures Artery Profile (BTR) **Ap 61**

Artificial Compressibility
Full Potential Solution of Transonic Quasi-3-D Flow Through a Cascade Using Artificial Compressibility (81-GT-70) (A) **Je 109**

Artificial Fur
An Experimental Investigation of the Convective Heat Transfer Mechanisms within a Fur Layer (80-WA/HT-28) (A) **Ap 105**

Artificial Reefs
Artificial Reefs from Coal Wastes (ES) **Ja 20**

Ash
Flame Imprinted Characteristics of Ash Relevant to Boiler Slagging, Corrosion and Erosion (81-JPGC-Fu-1) (A) **D 93**

Ash Deposition
A Furnace Wall Ash Monitoring System for Coal Fired Boilers (80-WA/Fu-1) (A) **F 127**

Ash Fouling
Coal Ash Fouling Test in a Laboratory Furnace (81-JPGC-Fu-8) (A) **D 93**
The Use of Additives to Reduce Ash Fouling Problems in Lignite-Fired Boilers (80-JPGC/Fu-3) (A) **Ja 99**

ASHRAE Meeting
Europeans and Americans Confer at ASHRAE Meeting (NR) **Ap 78**

ASME Pioneers
Centennial Profiles "Tops" (C) **Ap 55**

Aspect Ratio
Influence of the Aspect Ratio on the Dynamic Stability and Nonlinear Response of Rectangular Plates (81-DET-62) (A) **D 89**
Numerical Study of Heat Transfer in Rectangular Air Enclosures of Aspect Ratio Less Than One (80-WA/HT-43) (A) **Ap 106**

Asperities
Viscoplastic Lubrication of Asperities (81-Lub-43) (A) **D 99**

Assembly Lines
Assembly Line in Space (BTR) **O 52**

Assembly Systems
Optimization Analysis of Automated Assembly Systems (80-WA/Prod-20) (A) **My 83**

Assembly Theorems
Linkage Characteristic Polynomials: Assembly Theorems, Uniqueness (80-DET-9) (A) **F 118**

Assistive Devices
Greater Mobility for the Disabled (NB) **S 70**

Asteroids
Diamonds from Heaven (BTR) **Ag 48**

Astleford, W. J.
Mixing and Dilution of Water Soluble Hazardous Chemicals Released in Navigable Rivers (81-FE-17) (A) **S 81**

Astronauts
Assembly Line in Space (BTR) **O 52**

Astronauts' Training Manual
NASA Physical Fitness Manual (BTR) **Mr 73**

Astronomers
Astronomers Estimate Neptune's Rotation (BTR) **D 81**
Seeing Halfway Back to the Beginning (BTR) **Je 67**

Asymmetric Stacking
Asymmetric Free Vibrations of Layered Conical Shells (81-DET-68) (A) **D 90**

Asymmetric Stiffness
Flow Induced Vibrations of Heat Exchanger U-Tubes, A Simulation to Study the Effects of Asymmetric Stiffness (81-DET-20) (A) **D 89**

Asymptotic Expansions
Elastostatic Far-Field Behavior In a Layered Half Space Under Surface Pressure (80-WA/APM-7) (A) **Ja 100**
Nonlinear Corrections for Edge Bending of Shells (80-WA/APM-15) (A) **Ja 100**

Asymptotic Integration Methods
Asymptotic Intergration Methods Applied to Rotating Beams (80-WA/APM-32) (A) **Ja 102**

Asymptotic Structure
The Asymptotic Structure of Counterflow Premixed Flame for Large Activation Energies (81-HT-22) (A) **O 94**

Athre, K. A Numerical Approach to the Stability of Rotor-Bearing Systems (81-DET-61) (A) **D 90**

Atkinson, G. F. Air Supply System Bite for Boeing 767 Airplane (81-ENAs-7) (A) **S 86**

Atluri, S. N. An Analysis of, and Some Observations on, Dynamic Fracture in an Impact Test Specimen (81-PVP-18) (A) **Ag 80**

Atomic Energy Program
Cleaning Up (ES) **Ap 28**

Atmosphere Analyzers
A Monitor for Atmospheric Composition and Contaminants in Closed Environments (80-ENAs-35) (A) **Mr 113**

Atmospheric Circulations
Numerical Simulation of Mesoscale Atmospheric Circulations Over Lake Michigan (80-WA/HT-65) (A) **My 85**

Atmospheric Monitoring
Atmospheric Monitoring for Submarine Applications (80-ENAs'33) (A) **Mr 113**
Atmospheric Monitoring in Submersibles (80-ENAs-31) (A) **Mr 113**

Atmospheric Temperature
Effects of Pollutants and Urban Parameters on Atmospheric Temperature (80-WA/HT-4) (A) **Ap 103**
Greenhouse Effect on Venus (BTR) **Ag 46**

Atmospheric Test Program
Development of a Low-NO_X Lean Premixed Annular Combustor (81-GT-40) (A) **Je 106**

Attia, M. H. System Approach to the Thermal Behavior and Deformation of Machine Tool Structures in Response to the Effect of Fixed Joints (80-WA/Prod-14) (A) **My 83**

Atwater, M. A. The Effects of Clouds in Modeling Solar Radiation (80-WA/Sol-23) (A) **Ap 94**

Audet, N. F. A Ten-Zone Thermal Manikin for Evaluating Personnel Protective Garments in Cold Air and Water Immersion Environments (80-WA/OCE-13) (A) **Mr 118**

Audiovisual Communications
Audiovisual Competition (NB) **Jl 80**

Auslander, D. M. An Approach to the Preliminary Evaluation of Closed-Ecology Life Support System (CELSS) Scenarios and Control Strategies (81-ENAs-38) (A) **O 101**

Austenitic Steels
Long-Life Fatigue of Type 316 Stainless Steel of Temperatures Up to 593°C (81-Mat-2) (A) **O 102**

Authors' Views
What's Wrong With Being Controversial? (C) **Mr 65**

Auto Electronics
Industry News (NB) **N 90**

Auto-Oscillation
A Thermomechanical Example of Auto-Oscillation (80-WA/APM-21) (A) **Ja 101**

Automated Design
Automated Design for Automotive Structures (81-DET-91) (A) **N 105**

Automated Systems
Automated Storage/Retrieval Systems; A State-of-the-Art Update (80-WA/MH-4) (A) **Ap 96**

Automated Turbine Test
Portable Computerized Power Plant Equipment Testing **Mr 58**

Automatic Inspection
Computer Intelligence Design for Automatic Inspection of Steam Generator Tubes (81-NE-2) (A) **S 81**

Automatic Machining
CAD/CAM Loop for Automatic Machining of Large Parts (BTR) **My 45**

Automation
Automation Seen as Key Piece in Productivity Puzzle at Material Handling Show (NR) **Je 85**
Economic Considerations for Automating Unit Handling and Storage (80-WA/MH-6) (A) **Ap 96**
Historical Highlights of Interactive Computer Graphics **N 32**
Improved Jet Engine Maintenance Through Automated Vibration Diagnostic Systems (81-GT-62) (A) **Je 109**
Interordering: A New Method of Component Orientation (Studies in Mechanical Engineering, Vol. 2) (CB) **Ag 85**
Optimization Analysis of Automated Assembly Systems (80-WA/Prod-20) (A) **My 83**

Automobile Fuel
The Cars of the 1990s (NR) **D 75**

Automobile Gas Turbines
Analytical Consideration of Fuel Economy and Dynamic Response of a Regenerative High Temperature Automobile Gas Turbine—Part 11 (81-GT-218) (A) **Jl 91**

Automotive Components
Computer Graphics Speeds Car Component Design (BTR) **Ag 46**

Automotive Field
Gas Turbines for Automotive Use (CB) **S 90**

Automotive Industry
Of Collisions and Cancer. . .(C) **Mr 64**
A History of the Columbus Section of ASME: 1920-1980 (CB) **Ag 84**

Automotive Research
Car Research Keeps Up With Consumers (NB) **F 65**

Automotive Structures
Automated Design for Automotive Structures (81-DET-91) (A) **N 105**

Automotive Transportation
Car of the Future: 100 mpg (BTR) **S 50**

Automotive Vehicles
Liquid Hydrogen for Automotive Vehicles—Experimental Results (81-HT-83) (A) **O 99**

Autonomous Systems
On the Stability of Equilibrium Paths Associated With Autonomous Systems (81-APM-9) (A) **S 84**

Autotrophic Nitrification
A Mathematical Method for Prediction of Optimal pH and Tempertaure for Nitrification in Well-Aerated

Natural and Domestic-Waste Waters (81-ENAs-24) (A) O 101

Auxiliary Cooling Systems

Direct Reactor Auxiliary Cooling System for the 1000-MWe LMFBR Developmental Plant (81-JPGC-NE-7) (A) N 109

Primary Loop Heat Exchanger for HTGR Plant Residual Heat Removal and Auxiliary Cooling System (81-JPGC-NE-10) (A) N 110

Auxiliary Fuel Consumption

Reducing Auxiliary Fuel Consumption in Pulverized-Coal-Fired Boilers (80-WA/Fu-3) (A) F 126

Auxiliary Power Units

Gemini T-20G-8 XM1 Tank APU (81-GT-81) (A) Je 110

Availability Improvement Programs

Utility Experience with an Availability Improvement Program: Status and Current Direction (80-JPGC/Pwr-18) (A) F 117

Avedisian, C. T. Effect of Pressure on Bubble Growth Within Liquid Droplets Heated to Their Limits of Superheat (81-HT-11) (A) O 94

Avernor, M. M. The CELSS Program; An Overview of its Structure and Use of Computer Modeling (81-ENAs-36) (A) S 88

Avery, J. P. Improving Productivity in Machining (81-DE-2) (A) Ag 77

Aviation

Aerospace Structures, Structural Dynamics, and Materials (NR) O 72

Avionics

Heat Pipe Avionic Thermal Control Systems (80-ENAs-4) (A) Mr 111

Avionics Equipment

Closed Loop Environmental Control Systems for Fighter Aircraft (81-ENAs-2) (A) S 86

Awaji, H. Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (80-WA/PVP-6) (A) Ja 98

Awards

Awards Competition at International Technology Fair (NR) F 62

Awards Directory

The Design and Building Industry's Awards Directory (CB) F 128

Axial Compressor Stage

A Computation and Comparison with Measurements of Transonic Flow in an Axial Compressor Stage with Shock and Boundary Layer Interaction (81-Gr/GT-5) (A) O 101

Axial Compressors

Theoretical Study of Flow Instabilities and Inlet Distortions in Axial Compressors (81-GT-211) (A) Jl 90

Axial Cracks

Ductile Axial Crack Extension in Pipes (80-WA/PVP-5) (A) Ja 98

Dynamic Crack Propagation in Very Ductile Materials—The Influence of Inertia (80-WA/PVP-8) (A) Ja 98

Axial Flow

A Mean Line Prediction Method for Axial Flow Turbine Efficiency (81-GT-58) (A) Je 109

Measurement and Analysis of Total-Pressure Unsteadiness Data from a Axial-Flow Compressor Stage (81-Gr-GT-2) (A) O 102

Parametric Resonance Oscillations of Flexible Slender Cylinders in Harmonically Perturbed Axial Flow—Part 1: Theory (80-WA/APM-30) (A) Ja 101

Radiation Heat Transfer in an Irregular Enclosure with Axial Flow (81-HT-70) (A) O 98

Stalling Pressure Rise Capability of Axial Flow Compressor Stages (81-GT-3) (A) Je 104

Axial-Flow Compressors

The Influence of Blade Number Ratio and Blade Row Spacing on Axial-Flow Compressor Stator Blade Dynamic Load and Stage Sound Pressure Level (81-GT-165) (A) Jl 87

A Model for Dynamic Loss Response in Axial-Flow Compressors (81-GT-154) (A) Jl 86

New Features in the Design of Axial-Flow Compressors with Tandem Blades (81-GT-113) (A) Je 113

Supersonic Stall Flutter of High-Speed Fans (81-GT-184) (A) Jl 89

Axial Flow Rotor

The Influence of Unsteady Rotor Response on a Distorted Flow Field (81-GT-185) (A) Jl 89

Axial-Flow Turbines

Efficiency Prediction for Axial-Flow Turbines Operating With Nonconventional Fluids (81-GT-15) (A) Je 105

Axial Flow Turbomachine

A Fast Numerical Procedure to Solve the Meridional Equations of Motion in a Multistage Axial Flow Turbomachine (81-GT-133) (A) Jl 85

Axial Gaps

Experimental Studies on the Flow Within the Side Recesses of a Centrifugal Pump Impeller and Casing (80-WA/Fu-7) (A) F 127

Axial Restraint

Axial Restraint of Tubes in a U-Tube Type Steam Generator (81-DET-38) (A) O 104

Axial Turbomachinery

Dynamic Response of Blades and Vanes to Wakes in Axial Turbomachinery (81-DET-33) (A) O 103

Axisymmetric Bodies

A Formulation for Radiative View Factors from Spheres to a Class of Axisymmetric Bodies (80-WA/HT-58) (A) Ap 107

Radiation Configuration Factors Between Disks and a Class of Axisymmetric Bodies (81-HT-56) (A) O 97

Aymar, A. A. Toward Full Professionalism (C) Ja 48

Azarbaijani, S. Bond Graph Structural Models for Heat Exchangers (80-WA/Sol-17) (A) Ap 94

Azuma, T. Balancing of Flexible Rotors by the Complex Modal Method (81-DET-46) (A) D 89

B

Baber, B. B. Inclusions and Service Induced Cracks in a Mature Population of Gas Turbine Engine Bearings (81-Lub-48) (A) D 99

Babish, C. A., III Design Analysis of High Temperature Transparent Windshields for High Performance Aircraft (81-ENAs-5) (A) S 85

Bachalo, W. D. An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) (A) Je 106

Back Tension The Reduction of Capstan Effectiveness by Cable Bending Resistance (80-WA/OCE-2) (A) Mr 118

Bacteriorhodopsin Energy Converting Protein (EN) Mr 83

Badash, L. *(editor)* Reminiscences of Los Alamos, 1943–1945 (Studies in the History of Modern Science 5) (CB) Jl 93

Badiani, M. Member Initial Curvature Effects on the Elastic Slider-Crank Mechanism Response (80-DET-72) (A) Mr 108; Plastic Strain Concentrations in Perforated Structures Subjected to Alternating Loads (81-PVP-22) (A) Ag 80

Bagci, C. Complete Shaking Force and Shaking Moment Balancing of Link Mechanisms Using Balancing Idler Loops (80-DET-100) (A) Mr 109; Finite Element Stress Analysis of Planar Elastic Systems Having Press Fitted Units (80-DET-98) (A) Mr 109; Hydrodynamic Lubrication of Finite Slider Bearings: Effect of Film Shape, and Their Computer Aided Optimum Designs (81-Lub-40) (A) D 99; Optimum Synthesis of Multi-Loop Planar Mechanisms Via the Linear Partition of Design Equations (Method of No Misconceptions) (80-DET-1) (A) F 118; Planar Polar Stress Elements with Regular and Irregular Joint Freedoms for Mechanical Design (80-DET-71) (A) Mr 107; Spatial Finite Line Element Method for Determining Critical Speeds of Multi-Throw Crankshafts Considering Actual Throw Geometry (81-DET-141) (A) D 91

Bahadur, S. Evaluation of Polymers as Lubricants in the Extrusion of Aluminum (81-Lub-21) (A) D 97

Bahati, R. S. Experimental Results in the Modeling and Control of a Small Furnace (80-WA/DSC-31) (A) Mr 116

Bahgat, B. M. An Approach for Dynamic Analysis of Mechanical Systems with Multiple Clearances Using Lagrangian Mechanics (81-DET-3) (A) O 102; On the Dynamic Gear Tooth Loading as Affected by Bearing Clearances in High-Speed Machinery (81-DET-112) (A) D 91; On the Prediction of Journal-Bearing Separation in High Speed Mechanisms with Clearances (80-WA/DSC-36) (A) Mr 117

Bahr, D. W. Impacts of Broadened-Specification Fuels on Aircraft Turbine Engine Combustors (81-GT-2) (A) Je 104

Bailey, D. A. Boundary Layer Development on Turbine Airfoil Suction Surfaces (81-GT-204) (A) Jl 90; Development of a Large-Scale Wind Tunnel for the Simulation of Turbomachinery Airfoil Boundary Layers (81-GT-6) (A) Je 104

Bailey, J. R. Analysis of Fly-Shuttle Loom Noise by Multi-Channel Digital Signal Processing Techniques (81-DET-100) (A) N 108

Bailyn, L. *(author)* Living with Technology: Issues at Mid-Career (CB) Ag 85

Bain, K. R. Evaluation of Methods for the Treatment of Mean Stress Effects on Low-Cycle Fatigue (81-GT-122) (A) Je 114

Bair, S. Regimes of Traction in Concentrated Contact Lubrication (81-Lub-16) (A) D 96; Some Observations in High Pressure Rheology of Lubricants (81-Lub-17) (A) D 96

Baird, Q. L. Operational Safety at the FFTF (81-JPGC-NE-6) (A) N 109

Baker, C. E. A Study of External Fuel Vaporization (81-GT-158) (A) Jl 86

Baker, J. E. On Attempting to Reduce Undesirable Inertial Characteristics of the Schatz Mechanism (80-DET-79) (A) Mr 108; On Linkages and Mobile Polyhedra (80-DET-30) (A) F 120

Baker, P. H. Progress in Railway Mechanical Engineering (1979–1980 Report of Survey Committee)—Locomotives (80-WA/RT-12) (A) F 126

Baker, S. M. Operational Safety at the FFTF (81-JPGC-NE-6) (A) N 109

Balance Scales

More Metric Musings (C) D 57

Balance Weights

The Balancing of Rotating Shafts by Quadratic Programming (80-DET-45) (A) F 121

Balancing

Application of the Principle of Reciprocity to Flexible Rotor Balancing (81-DET-49) (A) N 105

Balancing of Flexible Rotors by the Complex Modal Method (81-DET-46) (A) D 89

Complete Shaking Force and Shaking Moment Balancing of Link Mechanisms Using Balancing Idler Loops (80-DET-100) (A) Mr 109

Experiments on the Dynamic Behavior of a Supercritical Rotor (81-DET-59) (A) D 89

Balancing Systems

Method to Calculate the Balancing System of a Three-Cylinder Diesel Engine (81-DGP-8) (A) My 88

Balas, M. J. Nonlinear State Estimation and Feedback Control and Nonlinear and Bilinear Distributed Parameter Systems (80-WA/DSC-28) (A) Mr 116

Balje, O. E. *(author)* Turbomachines: A Guide to Design, Selection and Theory (CB) N 115

Ball, J. M. Controllability of Distributed Bilinear Systems; Recent Results and Open Problems (80-WA/DSC-27) (A) Mr 116

Ball, J. T. The Effects of Clouds in Modeling Solar Radiation (80-WA/Sol-23) (A) Ap 94

Ball Bearings

Slip Measurement in an Angular Contact Ball Bearing (81-Lub-33) (A) D 98

Ballou, E. Ion-Exchange Chromatography Separation Applied to Mineral Recycle in Closed Systems (81-ENAs-21) (A) O 100

Ballou, E. V. The Preparation of Calcium Superoxide in a Flowing Gas Stream and Fluidized Bed (80-ENAs-18) (A) Mr 111

Baltic Sea

Smooth Sailing (IF) Mr 77

Bamford, W. H. Fatigue Crack Growth in Pressurized Water Reactor Feedwater Lines (81-PVP-2) (A) Ag 79

Bammert, K. New Features in the Design of Axial-Flow Compressors with Tandem Blades (81-GT-113) (A) Je 113; Small Gas Turbine with Large Parabolic Dish Collectors (81-GT-201) (A) Jl 90; Tube Stresses in the Radiation Part of Solar Receivers and of Conventionally Fired Heaters (81-GT-200) (A) Jl 89

Ban, T. E. Low-Btu Gas From an Environmentally Clean Pellet Fuel (80-WA/Fu-2) (A) F 126

Bandstra, J. P. Comparison of Equivalent Viscous Damping and Nonlinear Damping in Discrete and Continuous Vibrating Systems (81-DET-89) (A) **D 90**

Bannister, R. L. Industrial Noise Pollution—Part 2: Identifying and Controlling Industrial Noise Sources **Ag 24**; Pulverized Coal Power Plants: The Next Logical Step **D 18**

Bar Coils

Coiled Bar Use on the Increase (BTR) **Je 65**

Barash, M. M. Machining Parameter Optimization for Multistation Synchronous Machines (80-DET-60) (A) **Mr 107**

Barbeau, D. E. A Family of Small, Low Cost Turbojet Engines for Short Life Applications (81-GT-205) (A) **Jl 90**

Barber, D. S. Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (80-EA/FE-9) (A) **My 86**

Barber, J. R. Stability Considerations in Thermoelastic Contact (80-WA/APM-25) (A) **Ja 102**

Barbour, I. G. *(author)* Technology, Environment, and Human Values (CB) **Jl 92**

Barclay, J. A. Can Magnetic Refrigerators Liquefy Hydrogen at High Efficiency? (81-HT-82) (A) **O 99**; Magnetic Refrigeration for Spacecraft Systems (81-ENAs-47) (A) **O 101**

Bardina, J. A Prediction Method for Planar Diffuser Flows (81-FE-5) (A) **Ag 83**

Bardon, M. F. Modified Brayton Cycles Utilizing Alcohol Fuels (81-GT-103) (A) **Je 112**

Barges

Pneumatic Unloading of Ships and Barges (80-WA/MH-10) (A) **Ap 97**

Barlo, F. Study of Secondary Flows in Blade Cascades of Turbomachines (81-Gr/GT-4) (A) **O 102**

Barker, J. M. The Adiabatic Adsorption-Desorption Characteristics of Silica Gel Beds—Part 1: Theory (80-WA/Sol-30) (A) **Ap 94**; Part 2: Curve Fits (80-WA/Sol-31) (A) **Ap 94**

Barker, R. L. Sampling for Confidence Interval Estimation of the Fiber Shape Factor (80-Tex-5) (A) **F 122**

Barman, N. C. Design Sensitivity Analysis of Planar Mechanism and Machine Dynamics (80-DET-6) (A) **F 119**

Barnes, R. M. *(author)* Motion and Time Study: Design and Measuremnt of Work, 7th Ed. (CB) **My 92**

Barnhart, J. S. Energy Transport System Optimization for Distributed Networks of Solar Collectors (81-Sol-1) (A) **My 87**

Barnum, B. M. Gas Turbine Performance Deterioration and Water Wash Frequency (81-JPGC-GT-10) (A) **D 95**

Baron, S., Dr. Solar Energy: Economics vs. Energetics **My 35**

Barr, A. D. S. Stability Boundary for Pseudo-Random Parametric Excitation of a Linear Oscillator (81-DET-15) (A) **D 88**

Barrett, L. E. Unbalance Response of a Two-Spool Gas Turbine Engine with Squeeze Film Bearings (81-GT-219) (A) **Jl 90**

Barrett, R. E. Predicted Burning Times of Nonporous Coal Particles as a Function of Pressure and Particle Size (80-WA/Fu-5) (A) **F 127**

Barriga, A. A Mathematical Model of a Combustion Pot: Comparison of Theory and Experiment (80-WA/HT-32) (A) **Ap 105**

Barrows, T. M. Modeling and Dynamic Response of Maglev Vehicles Subjected to Crosswind Gusts (80-WA/DSC-8) (A) **Mr 115**

Barry, K. E. Asymptotic Integration Methods Applied to Rotating Beams (80-WA/APM-32) (A) **Ja 102**

Barry, R. E. Steady-State Digital Computer Model for Supercritical Steam Generators (81-JPGC-Pwr-4) (A) **N 110**

Barsin, J. A. Experience with High Sodium Subbituminous Coals (80-WA/Fu-4) (A) **F 126**

Barsoum, M. Application of the Semi-Loof Thin Shell Element to the Analysis of Aircraft Engine Structures (81-GT-104) (A) **Je 112**

Bartholomae, R. Continuous Miner Noise (80-WA/NC-4) (A) **F 123**

Barton, J. R. Inclusions and Service Induced Cracks in a Mature Population of Gas Turbine Engine Bearings (81-Lub-48) (A) **D 99**

Bartz, J. A. Are Dry-Cooled Power Plants A Feasible Alternative? **O 34**

Bar-Yoseph, P. The Effect of Inertia on Flow Between Misaligned Rotating Disks (80-WA/FE-2) (A) **My 85**

Base Pressure

Two-Dimensional Turbulent Offset Jet-Boundary Interaction (80-WA/FE-12) (A) **My 85**

Baseload Gas Turbines

A Baseload Gas Turbine to Meet Utility Requirements for Reliability and Availability (81-GT-127) (A) **Jl 84**

Bastero, C. A Computer Method for the Finite Displacement Problem in Spatial Mechanisms (81-DET-110) (A) **N 107**

Batakis, A. Low NO_x Combustion Systems for Burning Heavy Residual Fuels and High-Fuel-Bound Nitrogen Fuels (81-GT-109) (A) **Je 113**

Batteries

Batteries for Peak Loads (ES) **Ja 21**

Electric Automobiles: Energy, Environmental, and Economic Prospects for the Future (CB) **Ja 104**

Science Expo '81 (NB) **Je 90**

'Superbattery' Under Development (BTR) **Jl 48**

Battery-Operated Truck

Electric Flatbed Vehicle (IF) **Ja 66**

Baum, A. J. An Experimental and Analytical Investigation of Boiling Heat Transfer in Porous Bodies (81-HT-44) (A) **O 97**

Baumeister, K. J. Numerical Techniques in Linear Duct Acoustics—A Status Report (80-WA/NC-2) (A) **F 124**

Baumgartner, R. J. Early Detection of Cross-Sectional Rotor Cracks by Turbine Shaft Vibration Monitoring Techniques (81-JPGC-Pwr-26) (A) **N112**

Bayonet Tube Exchangers

Optimal Design of Bayonet Tube Exchangers for Isothermal Shell-Side Conditions (81-HT-34) (A) **O 96**

Bazilla, M. *(author)* Electric Traction on the Pennsylvania Railroad, 1895–1968 (CB) **My 92**

Beach, G. R. Development, Testing and Field Use of a Specialty Electro-Mechanical, Contra-Helical Steel Strength Member Cable (80-WA/OCE-7) (A) **Ap 97**

Beacher, B. Improved Particle Trajectory Calculations Through Turbomachinery Affected by Coal Ash Particles (81-GT-53) (A) **Je 108**

Beacon, R. G. Three Methods of Empty/Load Braking for Freight Cars (80-WA/RT-7) (A) **F 126**

Beal, G. W. Evaluation of Concepts for Controlling Exhaust Emissions from Minimally Processed Petroleum and Synthetic Fuels (81-GT-157) (A) **Jl 86**

Beam Analysis

A Microprocessor-Based Interactive Beam Analysis Program with Graphics—Dynamic and Static (81-DE-12) (A) **Ag 78**

Beam Elements

The Finite Element Design of Linkages—A Comparison of Timoshenko and Euler Bernoulli Elements (81-DET-109) (A) **N 107**

Beams

Experiments on Cheotic Motions of a Forced Nonlinear Oscillator: Strange Attractors (80-WA/APM-2) (A) **Ja 99**

On a Finite Element Formulation of Dynamical Torsion of Beams Including Warping Inertia and Shear Deformation Due to Nonuniform Warping (81-DET-140) (A) **D 91**

Beams, E. W. An Experimental Investigation of a Low Temperature Ratio Stirling Engine (81-DGP-11) (A) **My 88**

Beard, J. T. Performance and Air Pollutant Emissions of an Experimental Water/Residual Oil Emulsion Burner in a Commercial Boiler (80-WA/APC-1) (A) **Ap 102**

Beards, C. F. The Damping of Structural Vibration by Controlled Interfacial Slip in Joints (81-DET-86) (A) **N 106**

Beardsley, C. W. Beardsley to Suceed Jaklitsch as ASME Editor (NR) **O 75**

Bearing Clearances

On the Dynamic Gear Tooth Loading as Affected by Bearing Clearances in High-Speed Machinery (81-DET-112) (A) **D 91**

Bearing Damper Element

Engine Dynamic Analysis With General Nonlinear Finite-Element Codes—Part 1: Overall Approach and Development of Bearing Damper Element (81-GT-151) (A) **Jl 85**

Bearing Identification

An Appraisal of Schroeder-Phased Harmonic Signals for Bearing Identification (80-WA/DSC-34) (A) **Mr 116**

Bearing Life

Effects of Ultra-Clean and Centrifugal Filtration on Rolling-Element Bearing Life (81-Lub-35) (A) **D 97**

Bearing-Support Damping

Optimum Bearing-Support Damping for Rotor-Bearing Systems for Maximum Stable Operating Speed Range (81-DET-69) (A) **O 104**

Bearings

Bearing Fault Detection Using Adaptive Noise Cancelling (81-DET-7) (A) **D 88**

Full-Flow Debris Monitoring in Gas Turbine Engines (81-GT-60) (A) **Je 109**

Inclusions and Service Induced Cracks in a Mature Population of Gas Turbine Engine Bearings (81-Lub-48) (A) **D 99**

Joint ASLE/ASME Lubrication Conference, review (NR) **D 72**

A Numerical Approach to the Stability of Rotor-Bearing Systems (81-DET-61) (A) **D 90**

The Thermal Behavior of Oscillating Squeeze Films (81-Lub-26) (A) **D 97**

Beatty, K. O., Jr. Transfer Thermography **O 42**

Beaubien, L. Fracture Criteria of Fibrous Laminated Composites Under In-Plane Multidirectional Loading (80-WA/APM-9) (A) **Ja 100**

Becker, B. Combined Gas and Steam Cycle for a Gas-Cooled Solar Tower Power Plant (81-GT-102) (A) **Je 112**

Becker, R. S. An Investigation of the Mechanics and Noise Associated with Coal Cutting (80-WA/NC-1) (A) **F 123**

Beckman, W. A. Design Procedure and Applications of Solar-Assisted Series Heat Pump Systems (80-WA/Sol-9) (A) **Ap 93**

Beckmann, J. Measurement of the Influence of Flow Distortions on the Blade Vibration Amplitude in an Air Turbine (81-DET-135) (A) **D 91**

Beckmann, K. Environmental Control of a Pressurized Equipment Container for Shuttle Flights—The Spacelab Igloo (80-ENAs-19) (A) **Mr 111**

Bed Friction

The Effects of Bed Friction on Lateral Mixing in Open Channel Flow (81-FE-9) (A) **S 81**

Bedford, A. An Application of Mixture Theory to Particulate Sedimentation (80-WA/APM-1) (A) **Ja 99**

Bedrossian, H. Application of Structural Optimization Technique to Reduce the External Vibrations of a Gas-Turbine Engine (81-DET-143) (A) **N 108**

Behavioral Patterns

The Year of the Robot (CB) **Jl 92**

Beier, R. A. Soot Volume Fraction Profiles in a Free Combusting Boundary Layer (81-HT-1) (A) **S 88**

Bell, C. E. Stability and Curving Mechanics of Rail Vehicles (80-WA/DSC-15) (A) **Mr 115**

Bellamy, R. A. Development of a Correlated Finite Element Dynamic Model of a Complete Aero Engine (81-DET-74) (A) **O 104**

Belles, G. T. Coal-Oil Mixtures: A Near-Term Approach to Conserving Petroleum (81-Pet-22) (A) **My 90**

Bellman, L. The Outdated "Professional Man" (C) **Ag 43**

Bellmore, C. P. Numerical Prediction of Wall Temperatures for Near-Critical Para-Hydrogen in Turbulent Upflow Inside Vertical Tubes (80-WA/HT-52) (A) **Ap 106**

Belt Conveyors

Power Generation Using a Downhill Conveyor (80-WA/MH-15) (A) **Ap 97**

Belt Feeders

Conveyor Belt Scales and Gravimetric Weigh-feeders—An Evolution (81-JPGC-Pwr-11) (A) **D 92**

Bench Scale Testing
Bench Scale Testing of Low-NO_x LBG Combustors (81-GT-59) (A) **Je 109**
Bendiksen, O. O. The Effect of Bending-Torsion Coupling on Fan and Compressor Blade Flutter (81-GT-163) (A) **JI 87**
Bending
A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part 1: J-Integral Analysis (80-WA/PVP-3) (A) **Ja 98**
Bending Effects
Automated Design for Automotive Structures (81-DET-91) (A) **N 105**
Bending Moment
Development of an Instrumented Marine Riser Joint (81-Pet-25) (A) **My 90**
Bending-Torsion Coupling
The Effect of Bending-Torsion Coupling on Fan and Compressor Blade Flutter (81-GT-163) (A) **JI 87**
Benedict, R. P. Interim Report on Water Induction Detection Studies (81-JPGC-Pwr-27) (A) **N 113**
Benko, D. Thermal Vacuum Testing of Flexible Radiator Systems (81-ENAs-46) (A) **S 88**
Bennett, J. A. Automated Design for Automotive Structures (81-DET-91) (A) **N 105**
Bennett, J. C. Development of a Correlated Finite Element Dynamic Model of a Complete Aero Engine (81-DET-74) (A) **O 104**
Bennett, S. B. Pulverized Coal Power Plants: The Next Logical Step **D 18**
Benoit, J. M. Failure Analysis Study of a Steam-Jacketed Pressure Vessel in Coffee Decaffeination Service (81-PVP-7) (A) **Ag 82**
Benson, J. . . . And Uncle Sam (C) **Ag 42**
Benson, R. C. Overview of Major Causes of Pulverizer Failures (80-JPGC/Pwr-5) (A) **F 116**
Beohar, S. B. L. Optimum Stochastic Synthesis of Four-Bar Spatial Function Generators (80-DET-32) (A) **F 120**
Beran, M. A. 3 MSP Synthesis of the RCCC Linkage: A Generalized Dual Number Approach (80-DET-99) (A) **Mr 109**
Berballan, G. J-Integral Estimation Procedures (81-PVP-10) (A) **Ag 79**
Berenyi, T. Dynamic Continuous Path Synthesis of Industrial Robots Using ADAMS Computer Program (80-DET-41) (A) **F 121**
Bergen, H. A. Editor, Retiring (C) **N 73**
Berghmans, J. Surface Tension Effects During Condensation on a Horizontal Tube (81-HT-26) (A) **O 95**
Berkof, R. S. Mechanism Case Studies V (80-DET-13) (A) **F 118**
Berlad, A. L. Free and Forced Convective Effects on Air-Permeable Insulation Systems (81-HT-47) (A) **O 97**
Bernath, L. Storm Over S-T View (C) **Ja 52**
Berner, W. E. Evaluation of Sealing Systems for Nonflammable Aircraft Hydraulic Fluids (81-Lub-51) (A) **D 99**
Berringer, R. T. Data Analysis and Analytical Predictions of a Steam Generator Tube Bundle Flow Field for Verification of 2-D T/H Computer Code (81-JPGC-NE-1) (A) **N 109**
Berry, W. E. Erosion-Corrosion in the Multisolids Fluidized Bed Combustor, Part II: Burning Coal With Limestone in a 14 × 25-In. Unit with Integral Boiler (80-WA/CD-4) (A) **Ja 97**; NASA-AMES Life Sciences Flight Experiments Program—1980 Status Report (80-ENAs-34) (A) **Mr 113**
Bert, C. W. Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) (A) **S 85**
Berzak, N. Optimization of Cam-Follower Systems with Kinematic and Dynamic Constraints (80-DET-11) (A) **F 118**
Best, R. H. The Development and Design of Steam/Water Solar Receivers for Commercial Application (81-Sol-4) (A) **S 80**
Best Workers
The Competence Game: How to Find, Use, and Keep Competent Employees (CB) **O 106**
Beta Battery
'Superbattery' Under Development (BTR) **JI 48**
Bethell, L. R. Coal Mixing: System and Equipment Design Considerations (81-JPGC-Pwr-25) (A) **N 113**
Betts, W. S., Jr. The Response of a Thermal Barrier System to Acoustic Excitation in a Gas Turbine Nuclear Reactor (81-GT-16) (A) **Je 105**; The Venting Characteristics of a Fibrous Thermal Barrier System During a Rapid Depressurization Accident (Rotor Failure) in an HTGR-GT (81-GT-14) (A) **Je 105**
Bevel Gears
Making Large Spiral Bevel and Hypoid Gears **Ag 34**
Beynon, T. G. R. Turbine Pyrometry—An Equipment Manufacturer's View (81-GT-136) (A) **JI 85**
Bhat, D. G. Advanced Coating for Gas Turbine Materials (81-GT-85) (A) **Je 111**
Bhat, R. B. Dynamic Behavior of a Moving Belt Supported on Elastic Foundation (80-DET-55) (A) **Mr 108**; Optimum Journal Bearing Parameters for Minimum Rotor Unbalance Response in Synchronous Whirl (81-DET-55) (A) **N 105**
Biederman, R. R. Strengthening Mechanisms and Process Controls for Super Waspaloy (81-GT-175) (A) **JI 88**
Bielk, J. R. Comparison of the Unbalance Responses of Jeffcott Rotors with Shaft Bow and Shaft Runout (81-DET-47) (A) **D 89**
Big Bang Theory
Neutrinos and the Nature of the Universe (BTR) **Ja 54**
Zeroing in on the Big Bang (BTR) **O 58**
Big Bend Unit
The Technical/Economic Issues and Reliability Requirements for Tampa Electric Company's Big Bend Unit #4 FGD System (81-JPGC-Pwr-35) (A) **D 93**
Bilinear Dynamic System
Experimental Results in the Modeling and Control of a Small Furnace (80-WA/DSC-31) (A) **Mr 116**
Bilinear Equations
The Bilinear, Modal State Equations for Age-Dependent Growth Control (80-WA/DSC-3) (A) **Mr 114**
Bilinear Systems
Control of Bilinear System with an Optimal Aim Strategy (80-WA/DSC-43) (A) **Mr 117**
Controllability of Distributed Bilinear Systems; Recent Results and Open Problems (80-WA/DSC-27) (A) **Mr 116**
On the Inverse of a Special Class of Bilinear Systems (80-WA/DSC-13) (A) **Mr 115**
Linear Optimal Estimation of Discrete Bilinear Systems (80-WA/DSC-14) (A) **Mr 115**
Bill, R. C. Fretting Wear and Fretting Fatigue—How Are They Related? (81-Lub-13) (A) **D 97**
Bimaterial Interface
A No-Slip Edge Crack on a Bimaterial Interface (80-WA/APM-14) (A) **Ja 100**
Bimodulus Composite Material
Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) (A) **S 85**
Binary Mixtures
Latent and Sensible Heat Transfer Rates in the Boiling of Binary Mixtures (81-HT-28) (A) **O 95**
Binary Rankine Engines
Binary Rankine-Cycle Engines for Solar-Thermal Power Systems (80-WA/Sol-19) (A) **Ap 94**
Bingham, W. G. Utilization of Design Change Control to Reduce Cost and Schedule Impacts on Power Projects (80-JPGC/Pwr-6) (A) **F 116**
Biodegradation
Cleaning Water Without Chemicals (EN) **My 71**
Bio-Energy
Bio-Energy Research (EN) **N 95**
Biogas Generators
U.S. Government Supports Biogas Research (IF) **O 85**
Biological Complexities
Design and Control Strategies for CELSS; Integrating Mechanistic Paradigms and Biological Complexities (81-ENAs-43) (A) **O 100**
Biological Heat
Engineering in Medicine and Biology (NR) **JI 70**
Biological Industry
Directory of Biological Products (BTR) **S 50**
Biological Models
Evaluation of Biological Models Using Spacelab (80-ENAs-38) (A) **Mr 113**
Biological Productivity
Artificial Reefs from Coal Wastes (ES) **Ja 20**
Biological Systems
A Chamber Design for Closed Ecological Systems Research (81-ENAs-37) (A) **O 100**
Biomass
Biomass for the Chemical Industry (BTR) **D 59**
Diesel Fuel from Biomass (ES) **S 24**
Energy from Biomass and Wastes (NB) **JI 79**
Engine Fuels from Biomass (81-DGP-4) (A) **My 87**
Fuels from Biomass (ES) **F 23**
Getting the Most Out of Biomass (ES) **N 71**
Let's Save Our Soil (C) **My 43**
Sunflower Seed Hulls as Supplementary Fuel to Coal-Fired Power Plants (81-JPGC-Fu-10) (A) **D 94**
Biospheric Sources
Impact of a Global Warming on Biospheric Sources of Methane and its Climatic Consequences (80-WA/HT-2) (A) **Ap 103**
Bird, J. D. Controlled Combustion of a Varying Low-Btu Coal-Derived Gas (81-GT-134) (A) **JI 85**
Bird Impacts
Interactive Multi-Mode Blade Impact Analysis (81-GT-79) (A) **Je 110**
Birds
Hawk and Man: An Ecological Equilibrium (NB) **O 76**
Birkebak, R. C. Thermal Radiation Properties of Pure H_2O Ice from 0.70 to 1.35 Micrometers (81-HT-67) (A) **O 99**
Bissell, T. J. Three Methods of Empty/Load Braking for Freight Cars (80-WA/RT-7) (A) **F 126**
BITE System
Air Supply System Bite for Boeing 767 Airplane (81-ENAs-7) (A) **S 86**
Bittel, L. R. The Theory and Practice of Management: Part Art, Part Science (80-WA/Mgt-1) (A) **Ja 102**
Bittker, D. A. Effect of Fuel Nitrogen and Hydrogen Content on Emissions in Hydrocarbon Combustion (81-GT-63) (A) **Je 109**
Bituminous Coal
Anthractie Vs Bituminous Coal Gasification (81-Pet-23) (A) **My 90**
Coal Gasification in Utah (ES) **Ag 21**
Coal Liquefaction Pilot Plant Processing Wyoming Coal (BTR) **D 61**
Bivariate Models
Explicit Identification of Machine Tool Structure and Cutting Process Using Bivariate Time Series Models (80-WA/Prod-27) (A) **My 84**
Bixby, A. M., Sr. Centennial Issue: Kudos and Comments (C) **Ja 48**; ME Goes Full Steam Ahead (C) **O 50**
Black, W. Hybrid Computer-Aided Design of a Hydrostatic Vehicle Drive with Energy Accumulator (80-DET-49) (A) **F 121**
Black, J. T. The Hammer QSD-Quick Stop Device for High-Speed Machining and Rubbing (80-WA/Prod-13) (A) **My 82**
Black, W. Z. Transient Simultaneous Heat and Mass Transfer in Moist, Unsaturated Soils (81-HT-50) (A) **O 97**
Black Americans
Black Americans in Technology (STV) **Ap 87**
Blade Ash-Erosion
Factors Affecting Blade Ash-Erosion in Axial Induced Draft Fans (80-JPGC-Pwr-7) (A) **F 116**
Blade Cascades
Study of Secondary Flows in Blade Cascades of Turbomachines (81-Gr/GT-4) (A) **O 102**
Blade Impact
Interactive Multi-Mode Blade Impact Analysis (81-GT-79) (A) **Je 110**
Blade Life
Factors Affecting Blade Ash-Erosion in Axial Induced Draft Fans (80-JPGC/Pwr-7) (A) **F 116**
Blade Passages
Inverse or Design Calculations for Non-Potential Flow in Turbomachinery Blade Passages (81-GT-78) (A) **Je 110**
Blade Row Spacing
The Influence of Blade Number Ratio and Blade Row Spacing on Axial-Flow Compressor Stator Blade Dynamic Load and Stage Sound Pressure Level (81-GT-165) (A) **JI 87**
Blade Rows
Computation of Three-Dimensional Flow Fields

Through Rotating Blade Rows and Comparison with Experiment (81-GT-121) (A) **Je 114**
A Simple Method for Compressor Stall Cell Propagation (81-GT-73) (A) **Je 110**

Blade Stagger Angle
Effect of Blade Stagger Angle on Performance of a Transonic Compressor with Low Hub-Tip Ratio (81-GT-177) (A) **Jl 88**

Blade Temperatures
Sensitivity of Turbine Blade Temperatures to Tolerances of Design Variables (81-GT-90) (A) **Je 111**

Blade Tips
Rotor Blade Tip Grinder (IF) **O 64**
Rotor Tip Leakage: Part I—Basic Methodology (81-GT-71) (A) **Je 110**; Part II—Design Optimization Through Viscous Analysis and Experiment (81-GT-72) (A) **Je 110**

Blade Vibration
Determination of Damping Values for Turbine Blades (81-DET-131) (A) **N 108**
Measurement of the Influence of Flow Distortions on the Blade Vibration Amplitude in an Air Turbine (81-DET-135) (A) **D 91**

Bladed Disks
An Investigation of Dual Mode Phenomena in a Mistuned Bladed Disk (81-DET-133) (A) **D 91**
Natural Frequencies of Rotating Bladed Discs Using Clamped-Free Blade Modes (81-DET-124) (A) **N 108**
A Parametric Study of Dynamic Response of a Discrete Mode of Turbomachinery Bladed Disk (81-DET-137) (A) **D 91**

Blades
Dynamic Response of Blades and Vanes to Wakes in Axial Turbomachinery (81-DET-33) (A) **O 103**
The Effect of Bending-Torsion Coupling on Fan and Compressor Blade Flutter (81-GT-163) (A) **Jl 87**
Finite Element Methods for Transonic Blade-to-Blade Calculation in Turbomachines (81-GT-5) (A) **Je 104**
Flow Transition Phenomena and Heat Transfer Over the Pressure Surfaces of Gas Turbine Blades (81-GT-107) (A) **Je 112**
On the Formulation of Coupled/Uncoupled Dynamics Analysis of Blade-Disc Assemblies (81-DET-126) (A) **D 91**
A Practical Approach to Systems Mode Analysis (81-DET-130) (A) **N 108**
A Quasi-Three-Dimensional Blade Surface Boundary Layer Analysis for Rotating Blade Rows (81-GT-126) (A) **Je 114**
Semi-Inverse Method of Computation in Inviscid Transonic Flows—Application to the Design of Turbomachine Blades Profiles (81-GT-206) (A) **Jl 90**
Some Technological Problems Associated with the Manufacture of Blades and Vanes for Stationary Gas Turbines in the USSR (81-GT-173) (A) **Jl 88**
Time-Variant Aerodynamics of High-Turning Blade Elements (81-GT-123) (A) **Je 114**

Blading Heat Transfer
Blading Heat Transfer Considerations in a Reheat-Gas-Turbine Combined Cycle (81-GT-155) (A) **Jl 86**

Blaine, D. G. Train Brake and Track Capacity Requirements for the 80s (81-RT-11) (A) **Ag 76**

Blair, C. K. Evaluation of a Helical Flow Recuperator (81-HT-25) (A) **O 95**

Blair, L. W. Effects of Size and Reynolds Number on Centrifugal Diffuser Performance (81-GT-8) (A) **Je 105**

Blair, M. F. Development of a Large-Scale Wind Tunnel for the Simulation of Turbomachinery Airfoil Boundary Layers (81-GT-6) (A) **Je 104**

Blanchard, S. W. . . . Sunlight . . . (C) **Ag 42**

Blast Containment
Soft Container for Explosive Nuts (BTR) **S 52**

Blattner, E. W. Elections to Fellow Grade **Je 101**

Blech, J. J. The Effect of Inertia on Flow Between Misaligned Rotating Disks (80-WA/FE-2) (A) **My 85**

Blevins, R. D. The Response of a Thermal Barrier System to Acoustic Excitation in a Gas Turbine Nuclear Reactor (81-GT-16) (A) **Je 105**

Blicq, R. S. *(author)* Technically—Write! (CB) **N 116**

Blimps
Airships Rise Again; Computers Throughout the Design Function (NR) **Je 74**

Bloch, H. P. Large-Scale Application of Pure Oil Mist Lubrication **My 30**

Block Lifting
The Block-Lift in Axial Piston Hydraulic Motors (81-FE-25) (A) **S 82**

Blockage
A Blockage Model for Centrifugal Compressor Impellers (81-GT-11) (A) **Je 105**

Blowdown Systems
Process Design Conditions for Boiler Blowdown System (81-PVP-37) (A) **Ag 82**

Bluff Structures
Universal Similarity in the Wakes of Stationary and Vibrating Bluff Structures (80-WA/FE-4) (A) **My 85**

Blumberg, B. Nuclear Power and Energy Uses (80-WA/NE-5) (A) **Ja 96**

Boat Trailer Winch
Winch Design—Good or Bad (80-WA/DE-11) (A) **Ap 98**

Bobick, T. G. Personal Equipment Development for Use in Underground Mining (81-ENAs-48) (A) **O 101**

Bockstahler, A. J. Design Analysis of High Temperature Transparent Windshields for High Performance Aircraft (81-ENAs-5) (A) **S 85**

Boeing Airplanes
The Cabin Air Conditioning and Temperature Control System for the Boeing 767 and 757 Airplanes (80-ENAs-5) (A) **Mr 110**

Boggs, J. H. Elections to Fellow Grade **My 79**

Boghani, A. B. Designing Perturbed Test Tracks for Evaluating Rail Vehicle Dynamic Performance (81-RT-7) (A) **Ag 76**

Boglands
At the JPGC: Environmentally Safe Energy Production (NR) **D 68**
Power from Peat: Irish Practice and Cost Data (81-JPGC-Fu-6) (A) **D 64**

Boiler Fuel
Development of a High-Solids, Coal-Water Mixture for Application as a Boiler Fuel (81-JPGC-Fu-4) (A) **D 93**

Boiler Operators
Boiler Operator's Guide, 2nd Ed. (CB) **D 102**

Boiler Performance
Testing the Coal-Oil Combo (ES) **Mr 36**

Boiler Slagging
Flame Imprinted Characteristics of Ash Relevant to Boiler Slagging, Corrosion and Erosion (81-JPGC-Fu-1) (A) **D 93**

Boilers
The AFBC Process (ES) **S 24**
Ahoy Coal-Fired Ships! (ES) **O 27**
Boiler Heat Transfer Model for Operator Diagnostic Information (81-JPGC-Pwr-14) (A) **N 111**
Boiler Operator's Guide, 2nd Ed. (CB) **D 102**
Coal Mixing: System and Equipment Design Considerations (81-JPGC-Pwr-25) (A) **N 113**
Drum Level Instrumentation for Reliable Boiler Operation (81-JPGC-Pwr-21) (A) **N 112**
Experience with In-Service Water Cleaning of Boiler Fireside Deposits (80-JPGC/Fu-6) (A) **Ja 99**
Process Design Conditions for Boiler Blowdown System (81-PVP-37) (A) **Ag 82**
Reducing Auxiliary Fuel Consumption in Pulverized-Coal-Fired Boilers (80-WA/Fu-3) (A) **F 126**

Boiling
A Method for Determining Rewetting Velocity Under Generalized Boiling Conditions (80-WA/HT-40) (A) **Ap 106**

Boiling Heat Transfer
An Experimental and Analytical Investigation of Boiling Heat Transfer in Porous Bodies (81-HT-44) (A) **O 97**
Latent and Sensible Heat Transfer Rates in the Boiling of Binary Mixtures (81-HT-28) (A) **O 95**

Boiling Water Reactors
A Swedish-American Offering (ES) **Jl 18**

Boley, W. E. Flow Instability Due to a Diameter Reduction of Limited Length in a Long Annular Passage (81-DET-26) (A) **N 104**

Bonakdar, H. A Method for Determining Rewetting Velocity Under Generalized Boiling Conditions (80-WA/HT-40) (A) **Ap 106**

Bond, G. N. Feasibility Study for the Use of Geothermal Energy at a Leggs' Hosiery Plant in New Mexico (81-Pet-8) (A) **My 89**

Bond Graphs
Bond Graph Models for Simulating HVAC Systems (80-WA/Sol-16) (A) **Ap 93**
Bond Graph Structural Models for Heat Exchangers (80-WA/Sol-17) (A) **Ap 94**
Bond Graphs of Age-Dependent Renewal (80-WA/DSC-4) (A) **Mr 114**

Bond Rotation
The Initial Modulus of Filament Webs (80-Tex-6) (A) **F 123**

Bonded Yarns
The Tearing of Plain Woven Fabrics Made from Ring, Open and Twistless and Twisted Bonded Yarns (80-Tex-4) (A) **F 122**

Bondi, K. R. Carbon Dioxide Effects on Submarines (80-ENAs-32) (A) **Mr 113**

Bones
Exercise for Healthy Bones (BTR) **Ap 58**

Bongaards, D. J. Double-Wall Tube Steam Generator for Breeder Nuclear Plants (81-JPGC-NE-2) (A) **N 109**

Bonneau, D. Film Formation and Flow Characteristics at the Inlet of a Starved Contact—Theoretical Study (81-Lub-22) (A) **D 98**

Boojum
Origin of Boojum (BTR) **Ag 45**

Book, W. J. A Comparison of Natural Frequency Prediction Methods for Flexible Manipulator Arms (80-WA/DSC-19) (A) **Mr 116**

Booker, J. *(author)* The Batsford Guide to the Industrial Archaeology of East Anglia: Cambridgeshire, Essex, Norfolk, Suffolk (CB) **Mr 119**

Booker, J. F. Dynamic Analysis of Rocking Journal Bearings with Multiple Offset Segments (81-Lub-34) (A) **D 98**; Effect of Surface Ellipticity on Dynamically Loaded Cylindrical Bearings (81-Lub-1) (A) **D 96**

Booth, T. C. Rotor-Tip Leakage: Part 1—Basic Methodology (81-GT-71) (A) **Je 110**; Part II—Design Optimization Through Viscous Analysis and Experiment (81-GT-72) (A) **Je 110**

Bordelon, T. R. Pressure Relief Valve Noise Attenuation (81-PVP-38) (A) **Ag 82**

Bordynuik, R. M. Flow Prediction in Rotating Ducts Using Coriolis-Modified Turbulence Models (80-WA/FE-1) (A) **My 85**

Boreholes
Drilling and Completing Multiple Branched Boreholes for In Situ Leach Mining (81-Pet-2) (A) **My 88**
Hydraulic Borehole Mining (81-Pet-6) (A) **My 89**

Boring Bars
A Comparative Study of the Lanchester Damper and the Segmented Slug Damper in Boring Bar Applications (81-DET-90) (A) **O 105**

Bornstein, B. Determining Turbine Throttle Flow from Measured First Stage Shell Pressure—A Critical Assessment (81-JPGC-Pwr-17) (A) **N 112**; A Simplified ASME Acceptance Test Procedure for Steam Turbines (80-JPGC/Pwr-15) (A) **F 117**

Bornstein, N. S. Deposition—Hot Corrosion in Gas Turbine Engines (81-GT-153) (A) **Jl 86**

Borys, S. S. Development of a Self-Actuated Shutdown System (81-JPGC-NE-8) (A) **N 109**

Bosch Reactors
The Use of Nickel and Cobalt Catalysts in a Bosch Reactor (80-ENAs-15) (A) **Mr 111**

Bosmans, R. F. Detection and Early Diagnosis of Potential Failures of Rotating Machinery (81-JPGC-Pwr-28) (A) **N 113**

Bost, L. O. Engineering Technicians (C) **O 50**

Botany
Botanists to Save Plants Threatened by Bulldozers (BTR) **Ag 47**

Botkin, M. E. Automated Design for Automotive Structures (81-DET-91) (A) **N 105**

Botman, M. Dynamic Response of Blades and Vanes to Wakes in Axial Turbomachinery (81-DET-33) (A) **O 103**; Experiments on the Dynamic Behavior of a Supercritical Rotor (81-DET-59) (A) **D 89**

Botros, K. K. Potential Flow Solution for Two Obliquely Impinging Two-Dimensional Plane Jets of Different Stagnation Pressures (81-FE-18) (A) **S 81**

Bottoming Cycles
Ammonia Bottoming Cycle Development at Electricité

de France for Nuclear Power Plants (81-GT-178) (A) **Jl 88**

Bouchez, J. P. Simulation of the Transport Time Delay in Fluid Loops by Means of a Corrective Heat Flux (80-ENAs-22) (A) **Mr 112**

Boules, E. B. Draining of Tanks with Submerged Outlets or Without Vacuum-Relief (81-FE-21) (A) **S 82**; Mixing and Dilution of Water Soluble Hazardous Chemicals Released in Navigable Rivers (81-FE-17) (A) **S 81**

Boundary Conditions

Analytical and Experimental Investigation of Magnetic Support Systems. Part I: Analysis (81-Lub-31) (A) **D 98**; Part II: Experimental Investigation (81-Lub-32) (A) **D 98**

Evaluation of Eigenvalues in Regions of Complicated Boundary Shape in Problems Governed by Helmholtz Equation (81-DET-76) (A) **O 105**

Vibrations of Cylindrical Shells With Time-Dependent Boundary Conditions (81-PVP-21) (A) **Ag 80**

Boundary-Layer Code

Some Modifications to, and Operational Experiences with, the Two-Dimensional, Finite-Difference, Boundary-Layer Code, STAN5 (81-GT-89) (A) **Je 111**

Boundary Layer Flows

A Theory for Fine Particle Deposition in 2-D Boundary Layer Flows and Application to Gas Turbines (81-GT-54) (A) **Je 108**

Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (81-WA/FE-9) (A) **My 86**

Boundary Layers

Boundary Layer Development on Turbine Airfoil Suction Surfaces (81-GT-204) (A) **Jl 90**

Buoyancy Effects on a Boundary Layer Along an Infinite Vertical Cylinder with a Step Change of Surface Temperature (80-WA/HT-25) (A) **Ap 104**

A Computation and Comparison with Measurements of Transonic Flow in an Axial Compressor Stage with Shock and Boundary Layer Interaction (81-Gr/GT-5) (A) **O 101**

Correction for Streamline Curvature and Coriolis Force in a Boundary Layer Integral Method (81-GT-97) (A) **Je 111**

Heat Transfer in a Periodic Boundary Layer Near an Axisymmetric Stagnation Point on a Circular Cylinder (81-GT-92) (A) **Je 112**

The Influence of a Laminar Boundary Layer and Laminar Injection on Film Cooling Performance (81-HT-38) (A) **O 96**

Interaction of Compressor Rotor Blade Wake with Wall Boundary Layer/Vortex in the End-Wall Region (81-Gr/GT-1) (A) **O 101**

A Quasi-Three-Dimensional Blade Surface Boundary Layer Analysis for Rotating Blade Rows (81-GT-126) (A) **Je 114**

Some Anomalies in the Boundary Layer and Friction Drag Characteristics of Streamwise Corrugated Walls at Transonic and Supersonic Freestream Velocities (81-FE-37) (A) **S 83**

Soot Volume Fraction Profiles in a Free Combusting Boundary Layer (81-HT-1) (A) **S 88**

Turbulent Boundary Layer Heat Transfer Experiments: A Separate Effects Study on a Convexly Curved Wall (81-HT-78) (A) **O 98**

Boundary Solutions

Boundary Element Techniques in Engineering (CB) **Ag 85**

Bounding Surfaces

The Workspaces of a Mechanical Manipulator (80-DET-107) (A) **Mr 110**

Bowen, J. Type and Dimensional Synthesis of Casement Window Mechanisms (80-DET-78) (A) **Mr 108**; **D 46**

Boyer, R. C. Condenser Provisions for On-Line Detection of Tube Sheet Inleakage (80-JPGC/Pwr-23) (A) **F 118**; Condenser Tube-To-Tube Sheet Joint Inleakage: An Overview (81-JPGC-Pwr-6) (A) **N 110**

Boylstein, R. E. 3-D Finite Element Analysis for the Investigation of Feedwater Line Cracking in PWR Steam Generators (81-PVP-3) (A) **Ag 78**

Boynton, C. K. Maintainable Maintenance Disconnect Valve (MMDV) for On-Orbit Component Replacement (80-ENAs-42) (A) **Mr 114**

Bozatli, A. N. Melting with a Heated Plate Under Contact Pressure-Variable Property Solution (80-WA/HT-7) (A) **Ap 103**

Braaten, R. J. A Generalized Torsion Spring Design Method—A Further Refinement (80-DET-5) (A) **F 119**

Bradley, E. S. The Role of Flight Research Vehicles in Prop-Fan Technology Development (81-GT-216) (A) **Jl 91**

Bradner, M. Praise for Perspective (C) **O 50**

Bradshaw, P. Effects of Nozzle Exit Turbulence on the Spreading (or Widening) Rate of Plane Free Jets (81-FE-22) (A) **S 82**

Bradwo. R. L. Emissions from Gasoline and Diesel De' ·ery Trucks by Chassis Transient Cycle (81-DGF-6) (A) **My 87**

Brady, J. B. Ceramic to Metal Attachment Using Low Modulus Brunsbond® Pad (81-GT-160) (A) **Jl 86**

Brady, M. Seeing Machines: Current Industrial Applications **N 52**

Brain Injuries

Device Helps Brain-Injured Children to Crawl (BTR) **D 63**

Brake Cylinders

Four-Wheel Dual Braking (BTR) **Ag 49**

Braking

'Brakes' of Driving Analyzed (BTR) **Ja 60**

Longitudinal Instability in Braked Landing Gear (80-WA/DSC-12) (A) **Mr 115**

Braking Equipment

Three Methods of Empty/Load Braking for Freight Cars (80-WA/RT-7) (A) **F 126**

Bramham, R. W. Effects of Amplitude of Oscillation on the Wear of Dry Bearings Containing PTFE (81-Lub-6) (A) **D 96**

Branched Cracks

On Branched, Interface Cracks (81-APM-20) (A) **S 84**

Brandt, G. B. Hot Spot Detection in Generators with Optical Fibers (81-JPGC-Pwr-18) (A) **N 112**

Brantman, R. Designing Perturbed Test Tracks for Evaluating Rail Vehicle Dynamic Performance (81-RT-7) (A) **Ag 76**

Braun, C. Role of Advanced Reactors in Electricity Generation (81-WA/NE-7) (A) **Ja 97**

Braun, S. Signature Analysis Applied to Drilling (81-DET-9) (A) **D 88**

Brayton Cycles

Modified Brayton Cycles Utilizing Alcohol Fuels (81-GT-103) (A) **Je 112**

Solar Brayton Cycle for Heating and Cooling (80-WA/Sol-33) (A) **Ap 95**

Brayton System

Compact Closed Cycle Brayton System for Marine Propulsion (80-WA/GT-4) (A) **Ap 102**

Breakdowns

Optimization Analysis of Automated Assembly Systems (80-W* ·rod-20) (A) **My 83**

Breathing Systems

A Thermal Analysis on the Deep Quest Life Support System (80-ENAs-30) (A) **Mr 113**

Brebbia, C. A. *(author)* Boundary Element Techniques in Engineering (CB) **Ag 85**

Breeder Nuclear Plants

Double-Wall Tube Steam Generator for Breeder Nuclear Plants (81-JPGC-NE-2) (A) **N 109**

Breeder Reactor Plants

Analysis of Prestressed Double-Wall Tubing for LMFBR Steam Generators (81-PVP-25) (A) **Ag 81**

The Plant Control System Design for the Clinch River Breeder Reactor Plant (80-WA/DSC-17) (A) **Mr 115**

Breeder Reactors

EBR-11 Gets Cogeneration Status (ES) **Ag 20**

Sodium-Water Reaction Testing in Support of LMFBR Steam Generator Development (81-JPGC-NE-3) (A) **N 109**

Brennen, C. E. Scale Effects in the Dynamic Transfer Functions for Cavitating Inducers (80-WA/HT-51) (A) **Ap 107**

Breton, E. J. Reinventing the Wheel: The Failure to Utilize Existing Technology **Mr 54**

Breuel, A. *(editor)* Oil Spill Cleanup and Protection Techniques for Shorelines and Marshlands. (Pollution Technology Review, No. 78) (CB) **N 116**

Brewe, D. Simplified Solution for Stresses and Deformations (81-Lub-54) (A) **D 100**

Brewe, D. E. Analysis of Starvation Effects on Hydrodynamic Lubrication in Nonconforming Contacts (81-Lub-52) (A) **D 100**

Brewer, G. D. Fuel for Future Transport Aircraft (81-HT-80) (A) **O 99**

Brewer, J. W. The Bilinear, Modal State Equations For Age-Dependent Growth Control (80-WA/DSC-3) (A) **Mr 114**; Bond Graphs of Age-Dependent Renewal (80-WA/DSC-4) (A) **Mr 114**

Bridge Circuit

Development of the Self-Temperature Compensated Resistance Strain Gage Used up to 700°C (81-GT-118) (A) **Je 113**

Brine Channels

Brine Channel Enlargement in Sea Ice During Spring Thaw (80-WA/HT-18) (A) **Ap 104**

Brittle Materials

Ultrasonic Machining System (IF) **Jl 60**

Broadwater, R. P. Control of a Nuclear Power Plant with Once-Through Steam Generators (80-WA/DSC-24) (A) **Mr 115**

Brophy, M. Power from Peat: Irish Practice and Cost Data (81-JPGC-Fu-6) (A) **D 94**

Brose, H. F. A Regenerative Life Support System for Space Operations Center (SOC)—A Probable First Flight Application (81-ENAs-12) (A) **S 86**

Brouillet, A. O. Maintainable Maintenance Disconnect Valve (MMDV) for On-Orbit Component Replacement (80-ENAs-42) (A) **Mr 114**; The Shuttle Extravehicular Mobility Unit (EMU)—A Combination of New Technology and Proven Hardware (81-ENAs-41) (A) **S 88**

Brown, A. Flow Transition Phenomena and Heat Transfer Over the Pressure Surfaces of Gas Turbine Blades (81-GT-107) (A) **Je 112**

Brown, J. D. Experimental Studies of Damping and Hydrodynamic Mass of a Cylinder in Confined Two-Phase Flow (81-DET-27) (A) **D 89**

Brown, K. E. Application of Production Systems Analysis to Determine Completion Sensitivity on Gas Well Production (81-Pet-13) (A) **My 85**; Application of Systems Analysis Techniques in Optimizing Gas Lift Installations (81-Pet-33) (A) **My 91**

Brown, K. W. Linear-Nonlinear Interface for Finite Element Impact Analysis (81-GT-39) (A) **Je 106**

Brown, R. A. Recent Pilot-Scale Development of a Low-NO_x, "Air-on-Wall" Corner-Fired Combustion System (81-JPGC-APC-4) (A) **D 100**

Brown, R. H. On the Mechanics of Chip Segmentation in Machining (80-WA/Prod-3) (A) **My 82**

Brown, S. C. Elections to Fellow Grade **F 113**

Brown, W. G. Determination of Damping Values for Turbine Blades (81-DET-131) (A) **N 108**

Brudenell, W. N. Sunflower Seed Hulls as Supplementary Fuel to Coal-Fired Power Plants (81-JPGC-Fu-10) (A) **D 94**

Bruges, E. A. More Metric Musings (C) **D 57**

Bruggemann, H. A Numerical Solution of the Thermal Elastohydrodynamic Lubrication in an Elliptical Contact (81-Lub-29) (A) **D 97**

Brummond, W. A. Development of a Self-Actuated Shutdown System (81-JPGC-NE-8) (A) **N 109**

Bruner, J. Development of Multi-Bar Weft-Insert Warp Knit Glass Fabrics for Industrial Applications (80-Tex-7) (A) **F 123**

Brunings, J. E. Direct Reactor Auxiliary Cooling System for the 1000-MWe LMFBR Developmental Plant (81-JPGC-NE-7) (A) **N 109**

Brunner, C. R. *(author)* Design of Sewage Sludge Incineration Systems (Pollution Technology Review No. 71) (CB) **Ap 109**

Bruno, A. Environmental Control System Concept Study for a Navy V/STOL Aircraft (80-ENAs-47) (A) **Mr 114**

Brunsbond® Pad

Ceramic to Metal Attachment Using Low Modulus Brunsbond® Pad (81-GT-160) (A) **Jl 86**

Bryan, P. C. Fuel Facts (C) **Ja 149**

B-Spline Functions

Application of B-Spline Functions to the Motion Specification of Cams (80-DET-28) (A) **F 120**

Bubble Growth

Effect of Pressure on Bubble Growth Within Liquid Droplets Heated to Their Limits of Superheat (81-HT-11) (A) **O 94**

Nonequilibrium Flashing Model for Rapid Pressure Transients (81-HT-35) (A) **O 95**

Bubbles
Driving Bubbles Out of Glass (BTR) **Ag 45**
Bubbly Flow Regime
A Nonequilibrium Vapor Generation Model for Flashing Flows (81-HT-84) (A) **O 99**
Bucher, D. H. Sorry About the Errors (C) **F 48**
Buchheit, R. D. Fatigue and Fracture Analysis of Two Turbine Shafts (81-PVP-27) (A) **Ag 81**
Buck, C. L. Economic Analysis and Optimization of Solar Residential Space Heating (80-WA/Sol-11) (A) **Ap 93**
Buck, S. L. Experimental Free Convection from an Inclined Cylinder (80-WA/HT-29) (A) **Ap 105**
Buckingham, R. D. Design Challenges of High Performance Aircraft POD EOCM Cooling Systems (81-ENAs-6) (A) **O 100**
Bucklus, R. O. Scattering Band Absorption for a Planar Medium (81-HT-61) (A) **O 98**
Buckling
On the Buckling Design of Spherical Shells (81-PVP-32) (A) **Ag 81**
Failure Analysis Study of a Steam-Jacketed Pressure Vessel in Coffee Decaffeination Service (81-PVP-7) (A) **Ag 82**
The Initial Modulus of Filament Webs (80-Tex-6) (A) **F 123**
Buderer, M. C. Life Sciences Experiments on Spacelab 1 (80-ENAs-36) (A) **Mr 113; Je 50**
Budget Cuts
Budget Reconciliation (WW) **Ag 70**
Budget Slashes
NAS Members Concerned Over Budget Slashes (EN) **Jl 74**
Budininkas, P. Water Recovery by Catalytic Treatment of Urine Vapor (80-ENAs-16) (A) **Mr 112**
Buecha, A. M. Materials & Energy **Ap 35**
Building Automation Systems
Energy Management Systems (BTR) **F 52**
Building Operations Managers
Taking a Second Look at Energy Management (NR) **Je 83**
Building Professionals
The Design and Building Industry's Awards Directory (CB) **F 128**
Buildings
Energy Conservation in Buildings and Industrial Plant's (CB) **Mr 119**
Bulk Handling
Bulk Handling—Advances in Mining, Transportation and Processing (80-WA/MH-9) (A) **Ap 96**
Bump, R. L. Fires in Electrostatic Precipitators—Survey Results, Discussion and Recommendations (81-JPGC-APC-1) (A) **D 100**
Buono, D. F. Optimum Friction Damping of a Flexible Rotor (81-GT-156) (A) **Jl 86**
Buoy Shapes
Performance Evaluation of Buoy Shapes for Deep Ocean Systems (80-WA/OCE-12) (A) **Ap 97**
Buoyancy
Buoyancy Effects on a Boundary Layer Along an Infinite Vertical Cylinder with a Step Change of Surface Temperature (80-WA/HT-25) (A) **Ap 104**
Buoyant Jet
Analytical Model of the Round Buoyant Jet (81-FE-10) (A) **S 81**
Buoyant Plume
Heat Transfer from a Buoyant Plume to an Unconfined Ceiling (81-HT-7) (A) **S 89**
Bureaucrats
Government as the Problem (C) **Ap 54**
Buried Pipes
Passive Acoustic Detection of Gas Leaks in Buried Pipes (80-WA/NC-17) (A) **F 125**
Burke, K. A. Oxygen Generation Subsystem for Spacecraft (81-ENAs-40) (A) **S 88**
Burmeister, L. C. A Monte Carlo Procedure for Two-Dimensional Steady Conduction at Straight Convecting Boundaries (80-WA/HT-42) (A) **Ap 106**
Burning Coal Particle
Predicted Burning Times of Nonporous Coal Particles as a Function of Pressure and Particle Size (80-WA/Fu-5) (A) **F 127**
Burning Combustibles
An Experiment and Model of a Fire Plume Rising from a Burning Heat Source of Finite Size (81-HT-5) (A) **S 89**
Burning Rates
Burning Rates of Linear Fuel Droplet Arrays (80-WA/HT-34) (A) **Ap 105**
Burning Shale Residual
Shale Oil Power (ES) **Mr 37**
Burnside, B. M. Dual Pressure Steam/Immiscible Liquid Cycles for Gas Turbine Exhaust Heat Recovery (81-GT-55) (A) **Je 108**
Burnups
Improving Nuclear Fuel Utilization (ES) **F 22**
Burr, T. E. Maintainable Maintenance Disconnect Valve (MMDV) for On-Orbit Component Replacement (80-ENAs-42) (A) **Mr 114**
Burrow, C. R. An Appraisal of Schroeder-Phased Harmonic Signals for Bearing Identification (80-WA/DSC-34) (A) **Mr 116**
Burrows, C. R. Frequency-Domain Estimation of Linearized Oil-Film Coefficients (81-Lub-7) (A) **D 96**
Burton, T. D. Parametric Excitation of Rail Vehicle Wheelsets Due to Track Irregularity (80-WA/DSC-20) (A) **Mr 116**
Buschman, H. W. Operating Experience of the EBR-II Steam Generating System (81-JPGC-NE-4) (A) **N 110**
Bush, G. S. General Gear Diameter Equations for the Synthesis of Multi-Speed Gear Trains (81-DET-117) (A) **D 92**
Bush, S. H. Elections to Fellow Grade **My 79**
Bushnell, D. J. An Experimental Investigation of Merging Buoyant Jets in a Crossflow (80-WA/HT-23) (A) **Ap 105**
Business Climate
Cautious Economic Optimism (NB) **F 65**
Business and Industry
Technology Assessment: A Background Review (80-WA/Mgt-3) (A) **Ja 102**
Busnaina, A. A. Computer Prediction of Local Destratification Near Low-Level Release Structures of Reservoirs (81-FE-11) (A) **S 81**
Butt Weld
Microcomputer Checks Butt-Weld Accuracy (BTR) **O 54**
Bynum, J. F. Influence of Service Exposure on Base and Weld Metal of ½ Cr- ½ Mo- ¼ V High-Pressure Steam Inlet Piping (81-PVP-24) (A) **Ag 80**

C

Cable Bending
The Reduction of Capstan Effectiveness by Cable Bending Resistance (80-WA/OCE-2) (A) **Mr 118**
Cables
Cable Insulation Research (ES) **Ap 29**
Development, Testing and Field Use of a Specialty Electro-Mechanical, Contra-Helical Steel Strength Member Cable (80-WA/OCE-7) (A) **Ap 97**
An Electro-Optical Array Support Cable (80-WA/OCE-8) (A) **Ap 97**
Long Coring Facility Winch and Cable System (80-WA/OCE-9) (A) **Ap 98**
The Natural Frequencies and Mode Shapes of Cables with Attached Masses (81-Pet-10) (A) **My 89**
Cabrera, V. Slurry Pipelines of the Future **Ap 30**
CAD/CAM System
Using CAD/CAM to Improve Productivity: The IPAD Approach **N 64**
Cadet Program
Utility Cadet Program (EN) **Ap 83**
Cadwallader, G. J. HTGR-GT Primary Coolant Transient Resulting from Postulated Turbine Deblading (81-GT-19) (A) **Je 105**
Cady, E. C. Development and Operational Testing of a Heat Pipe Dry Cooling Tower (80-JPGC/Pwr-22) (A) **F 118**
Cal Poly
"Hands-On" Learning at Cal Poly **Ap 49**
Calapodas, N. Model Analysis Using Helicopter Dynamic Test Data (81-DET-30) (A) **O 103**
Calcium Chloride
Use of Freeze Conditioning Agents and a Thawing Product on Coal (80-JPGC/Fu-5) (A) **Ja 98**
Calculus
Kinematic Analysis of Plate Cam Profiles Not Analytically Defined (80-DET-12) (A) **F 119**
Caliskan, M. Analysis of Fly-Shuttle Loom Noise by Multi-Channel Digital Signal Processing Techniques (81-DET-100) (A) **N 106**
Callinan, J. P. An Analysis of the Thermal Fixation of Pilings (80-WA/HT-6) (A) **Ap 103**
Cam Design
Self-Conjugate Cam Design for a High-Speed Low-Cost Indexing Mechanism (80-DET-14) (A) **F 119**
Cam Follower Systems
Analysis and Synthesis of Mechanical Error in Cam-Follower Systems (80-DET-22) (A) **F 120**
Optimization of Cam-Follower Systems with Kinematic and Dynamic Constraints (80-DET-11) (A) **F 118**
Residual Vibration Criteria Applied to Multiple Degree of Freedom Cam Followers (80-DET-3) (A) **F 118**
Cam-Link Mechanisms
The Cam-Link Mechanism: A General Overview and Specific Application to Rigid Body Motion (80-DET-15) (A) **F 119**
Cam Mechanisms
Optimum Sensitivity Synthesis of a Cam System Incorporating Manufacturing Tolerances (80-DET-31) (A) **F 119**
On the Periodic Response of Cam Mechanism with Flexible Follower and Camshaft (80-WA/DSC-33) (A) **Mr 116**
The Sensitivity Analysis of Cam Mechanism Dynamics (80-DET-93) (A) **Mr 109**
Cam Timing
Design and Evaluation of Drag-Link Driven Cams (80-DET-38) (A) **F 121**
Camber Variation
Effects of Camber Variation on Performance Characteristics of a High Specific Speed Propeller Pump (81-FE-26) (A) **S 82**
Camp, J., Jr. Dyehouse Energy Consideration for the 1980's (80-Tex-8) (A) **F 123**
Campbell, D. Portable Computerized Power Plant Equipment Testing **Mr 58**
Campbell, J., Jr. Coal-Fired Heaters for CCGT Cogeneration Service (81-GT-212) (A) **Jl 90**
Campbell, R. B. The Determination of Modal Damping Ratios from Maximum Entropy Spectral Estimates (80-WA/DSC-29) (A) **Mr 116**; A Mathematical Basis for the Random Decrement Vibration Signature Analysis Technique (80-DET-13) (A) **N 104**
Campbell Plant
Design and Operating Aspects of Campbell Plant Circulating Water System (80-JPGC/Pwr-17) (A) **F 117**
Cams
Application of B-Spline Functions to the Motion Specification of Cams (80-DET-28) (A) **F 120**
Assessment of the Dynamic Quality of a Class of Dwell-Rise-Dwell Cams (80-DET-83) (A) **Mr 108**
Computer Aided Design of Disk Cams from Numerical Follower Motion Data (80-WA/DSC-9) (A) **Mr 115**
Matrix Methods in Plate Cam Geometry (80-DET-111) (A) **Mr 110**
Numerical Scheme for Determining the Pressure Angle and Radius of Curvature of Cams (80-DET-70) (A) **Mr 107**
Canadian Maglev Vehicle
Suspension Bounce Response of Canadian Maglev Vehicle Under Guideway Excitations, Part I: Deterministic Analysis (81-DET-81) (A) **D 90**; Part II: Stochastic Modeling and Analysis (81-DET-82) (A) **D 90**
Cancer Diagnosis
Algorithms Could Automate Cancer Diagnosis (BTR) **D 62**
Candidates
Executive Director Search (NR) **F 63**
Cann, R. G. Industrial Noise Pollution—Part 3: The Practical Function of Acoustical Engineering **S 42**
Canonical Coordinates
Instantaneous Kinematics of Multiple-Degree-of-Freedom Motions (80-DET-53) (A) **Mr 106**
Capellar, L. J. Steady-State Digital Computer Model for Supercritical Steam Generators (81-JPGC-Pwr-4) (A) **N 110**
Caplan, C. R. Energy Efficient Muffler for Reduction of Exhaust Noise Generated by a Pneumatic Grinder (80-WA/NC-9) (A) **F 124**

Capozzi, T. J. The Development and Design of Steam/Water Solar Receivers for Commercial Application (81-Sol-4) (A) **S 80**

Capstan

The Reduction of Capstan Effectiveness by Cable Bending Resistance (80-WA/OCE-2) (A) **Mr 118**

Capuchin Monkeys

Simian Servants (BTR) **Jl 52**

Carbody Lateral Stability

Effects of Centerplate Friction on Truck Yaw Hunting and Carbody Lateral Stability (81-RT-9) (A) **Ag 76**

Carbon Adsorber Beds

Adsorption Interference in Mixtures of Trace Contaminants Flowing Through Activated Carbon Adsorber Beds (80-ENAs-17) (A) **Mr 112**

Carbon/Carbon Components

Carbon/Carbon Components for Advanced Gas Turbine Engines (81-GT-35) (A) **Je 107**

Carbon Dioxide

Carbon Dioxide Effects on Submarines (80-ENAs-32) (A) **Mr 113**

Design of Carbon Dioxide Pipelines (81-Pet-34) (A) **My 91**

Carbon Particulates

Soot Volume Fraction Profiles in a Free Combusting Boundary Layer (81-HT-1) (A) **S 88**

Carbonized Blend

Low-Btu Gas From an Environmentally Clean Pellet Fuel (80-WA/Fu-2) (A) **F 126**

Carcich, J. A. Development of a Rational Procedure for Monitoring Steam Turbine Performance (81-JPGC-Pwr-20) (A) **N 112**

Carcinogenic Waste

New Way to Treat Nuclear and Carcinogenic Waste (BTR) **O 58**

Carcinogens

Carcinogens in Industry and the Environment (Pollution Engineering and Technology Series, Vol. 16) (CB) **N 116**

Carden, J. Treatment of CELSS and PCELSS Waste to Produce Nutrients for Plant Growth (81-ENAs-19) (A) **O 100**

Cardiovascular Disease

The Battle Against Thrombosis (BTR) **Jl 47**

Carew, V. E. Economic Considerations for Automating Unit Handling and Storage (80-WA/MH-6) (A) **Ap 96**

Carhart, H. W. A History of the Naval Research Laboratory Contributions to Submarine Life Support Systems (80-ENAs-29) (A) **Mr 112**

Carley, C. T. Centennial Issue: Kudos and Comments (C) **Ja 48**

Carlson, H. *(author)* Springs: Troubleshooting and Failure Analysis (CB) **My 92**

Carlucci, L. N. Experimental Studies of Damping and Hydrodynamic Mass of a Cylinder in Confined Two-Phase Flow (81-DET-27) (A) **D 89**

Carnes, T. N. Analytical Modeling of Wave Interference Directional Microphones (80-WA/NC-6) (A) **F 124**

Carosella, D. P. Primary Loop Heat Exchanger for HTGR Plant Residual Heat Removal and Auxiliary Cooling System (81-JPGC-NE-10) (A) **N 110**

Carpenter, L. K. Controlled Combustion of a Varying Low-Btu Coal-Derived Gas (81-GT-134) (A) **Jl 85**; Materials Exposure Test Facilities for Varying Low-Btu Coal-Derived Gas (81-GT-170) (A) **Jl 87**

Carpenter, S. J. A Matter of Metrics (C) **My 42**

Carruthers, W. D. Material, Design, and Test Aspects of Ceramic Component Development (81-GT-179) (A) **Jl 88**

Carrying Case

Steel Wire Contest Winner (EN) **Jl 74**

Cars

Car of the Future: 100 mpg (BTR) **S 50**

Car Runs on Coal Dust (NB) **Ag 63**

The Cars of the 1990's (NR) **D 75**

Electric Automobiles: Energy, Environmental, and Economic Prospects for the Future (CB) **Ja 104**

Carson, W. L. An Interactive Computer Program for Force System Structural and Dimensional Synthesis (80-DET-61) (A) **Mr 107**

Caruvand, A. Application of Water Cooling for Improved Gas Turbine Fuel Flexibility and Availability (81-GT-68) (A) **Je 109**; Test Verification of Water Cooled Gas Turbine Technology (81-GT-66) (A) **Je 109**

Cascades

Aeroelastic Characteristics of a Cascade of Mistuned Blades in Subsonic and Supersonic Flows (81-DET-122) (A) **N 108**

Full Potential Solution of Transonic Quasi-3-D Flow Through a Cascade Using Artificial Compressibility (81-GT-70) (A) **Je 109**

An Inverse Time Marching Method for the Definition of Cascade Geometry (81-GT-167) (A) **Jl 87**

New Correlations of the Two-Dimensional Turbine Cascade Aerodynamic Performance (81-GT-128) (A) **Jl 84**

The Present Role of High Speed Cascade Testing (81-GT-95) (A) **Je 111**

Similarity Law of Transonic Flow Fields Around Cascades (81-GT-36) (A) **Je 107**

Solution of Plane Cascade Flow Using Improved Surface Singularity Methods (81-GT-169) (A) **Jl 87**

Time-Variant Aerodynamics of High-Turning Blade Elements (81-GT-123) (A) **Je 114**

Transonic Flow Computations in Cascades Using Finite Element Method (81-GT-4) (A) **Je 104**

Use of Cascade and Small Turbine Tests to Determine Erosion of Utility Turbines (81-GT-52) (A) **Je 108**

Case Goods

Order Selection of Full and Broken Case Goods (80-WA/MH-12) (A) **Ap 97**

Case Studies

Mechanism Case Studies V (80-DET-13) (A) **F 118**

Casement Windows

Type and Dimensional Synthesis of Casement Window Mechanisms (80-DET-78) (A) **Mr 108**; **D 46**

Casey, J. On the Characterization of Strain-Hardening in Plasticity (81-APM-26) (A) **S 85**

Casings

Effect of Casing Treatment on Performance of a Three-Stage L. P. Compressor (81-GT-159) (A) **Jl 86**

Caskey, M. R. Dust and Sand Protection for Marine Gas Turbines (81-GT-74) (A) **Je 110**

Cason, R. M. A Monitor for Atmospheric Composition and Contaminants in Closed Environments (80-ENAs-35) (A) **Mr 113**

Cassel, D. E. Evaluation of a Proposed Modification of the F-Chart Method to Include Collector Array Air Leakage (80-WA/Sol-12) (A) **Ap 93**

Cast Aluminum

Predicting Lifetime of Cast Parts (BTR) **Ja 59**

Castables

Refractory Construction (C) **D 56**

Castelli, F. P. A Comparison of the Second and Third Editions of the ASME Recommended Guide for the Prediction of the Dispersion of Airborne Effluents (80-WA/APC-3) (A) **Ap 102**

Castle, R. W. Contingency Planning for Liquid Pipeline Spills (81-Pet-12) (A) **My 89**

Castleberry, G. A. Fatigue Considerations for Sizing Machinery Components (81-DE-6) (A) **Ag 78**

Catalogs

New Catalogs Guide **Ag 4**

Catalysts

Catalyst "Whiskers" (ES) **Ja 21**

Effects of Vitiation on Axial Catalyst Bed Temperature Profiles (81-GT-141) (A) **Jl 84**

Catalytic Combustors

Development of a Small-Scale Catalytic Gas Turbine Combustor (81-GT-43) (A) **Je 106**

Catalytic Conversion

Emission Reduction by Combustion Modification in Two Stroke Spark Ignited Gas Engines and by Catalytic Conversion (81-DGP-7) (A) **My 87**

Catalytic Converters

NO_x Reduction on Large Bore SI Engines Using Catalytic Converters (81-DGP-9) (A) **My 88**

Catalytic Treatment

Water Recovery by Catalytic Treatment of Urine Vapor (80-ENAs-16) (A) **Mr 112**

Catamarans

Catamaran Caters to Divers (BTR) **Ap 61**

Caterpillar Tractor

Britain Claims its Share of Landmark (C) **S 48**

Holt Caterpillar Tractor Designated International Landmark (NR) **Je 82**

Cathode-Ray Tubes

Dashboard CRT's? (NB) **Jl 79**

Caustics

Dynamic Fracture Initiation in Metals and Preliminary Results on the Method of Caustics for Crack Propagation Measurements (81-PVP-15) (A) **Ag 80**

Cavendish, J. C. The Effect of Flow Maldistribution on the Thermal Response of Packed-Bed Converters and Thermal-Energy Storage Units (81-HT-59) (A) **O 98**

Cavitating Inducers

Scale Effects in the Dynamic Transfer Functions for Cavitating Inducers (80-WA/HT-51) (A) **Ap 107**

Cavitation

An Experiment on Pump Pressure Fluctuation, Vibration and Air Borne Noise Caused by Cavitation (81-DET-94) (A) **N 106**

Lubrication of a Cylinder on a Plane With a Non-Newtonian Fluid Considering Cavitation (81-Lub-2) (A) **D 95**

Supercavitating Cavity Observations by Means of Laser Velocimeter (80-WA/FE-5) (A) **My 85**

Cavitation Region

Observation of Pressure Variation in the Cavitation Region of Submerged Journal Bearings (81-Lub-11) (A) **D 96**

Cavoli, N. C. Commercial Engine Logistics Cost Projections—A Dynamic and Flexible Approach (81-GT-114) (A) **Je 113**

Cell-to-Cell Mappings

An Unravelling Algorithm for Global Analysis of Dynamical Systems: An Application of Cell-to-Cell Mappings (80-WA/APM-27) (A) **Ja 101**

CELSS Program

The CELSS Program: An Overview of its Structure and Use of Computer Modelling (81-ENAs-36) (A) **S 86**

Centennial Issue

Centennial Issue: Kudos and Comments (C) **Ja 48**

Centennial Profile

Centennial Profiles "Tops" (C) **Ap 55**

Ralph E. Flanders—A Yankee Engineer-Politician **Mr 38**

Stephen P. Timoshenko—and the Birth of the Applied Mechanics Division **F 24**

William F. Durand—Dean of American Engineers **Ja 22**

Centennial Year

Looking Back, Yet Forward (Ed) **Je 23**

Centerplate Friction

Effects of Centerplate Friction on Truck Yaw Hunting and Carbody Lateral Stability (81-RT-9) (A) **Ag 76**

Centrifugal Compression Systems

Effects of Vaneless Diffuser Geometry on Flow Instability in Centrifugal Compression Systems (81-GT-10) (A) **Je 104**

Centrifugal Compressors

A Market Research Effort Leading to the Development of a High-Efficiency 10,000-shp Gas Turbine System (81-GT-190) (A) **Jl 89**

Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) (A) **Ag 82**

Mechanical Design of a High-Efficiency 7.5-MW (10,000-hp) Gas Turbine (81-GT-210) (A) **Jl 90**

Process Centrifugal Compressor Efficiency Improvement (80-WA/GT-2) (A) **Ap 102**

Centrifugal Diffusers

Effects of Size and Reynolds Number on Centrifugal Diffuser Performance (81-GT-8) (A) **Je 105**

Centrifugal Pump Impeller

Experimental Studies on the Flow Within the Side Recesses of a Centrifugal Pump Impeller and Casing (80-WA/Fu-7) (A) **F 127**; (80-WA/FE-7) (A) **My 86**

Centrifugal Pumps

A Theoretical Study on Air Bubble Motion in a Centrifugal Pump Impeller (80-WA/FE-3) (A) **My 85**

Centrifuges

Giant Engine Simulator (ES) **Je 24**

Centrifuge

Novel Sterilizing Process (BTR) **D 59**

Cepstral Analysis

Use of Cepstra in Acoustical Signal Analysis (81-DET-138) (A) **D 92**

Ceramic Alloys

Sintering Microstructure and Properties of Si_3N_4 and SiC Based Structural Ceramics (81-GT-220) (A) **Jl 91**

Ceramic Coatings

Ceramic to Metal Attachment Using Low Modulus

Brunsbond® Pad (81-GT-160) (A) **JI 86**
Thermal and Flow Analysis of a Convection, Air-Cooled Ceramic Coated Porous Metal Concept for Turbine Vanes (81-HT-48) (A) **O 97**
Ceramic Component Development
Material, Design, and Test Aspects of Ceramic Component Development (81-GT-179) (A) **JI 88**
Ceramic Gas Turbines
Analytical Consideration of Fuel Economy and Dynamic Response of a Regenerative High Temperature Automobile Gas Turbine—Part II (81-GT-218) (A) **JI 91**
Ceramic Materials
Materials Exposure Test Facilities for Varying Low-Btu Coal-Derived Gas (81-GT-170) (A) **JI 87**
Ceramic Turbocharger
Development and Testing of a Ceramic Turbocharger Rotor (81-GT-195) (A) **JI 89**
Ceramics
American Ceramic Predicts Japanese Earthquake (NB) **Ap 80**
Ceranoglu, A. N. Propagation of Elastic Pulses and Acoustic Emission in a Plate—Part 1: Theory (81-APM-4) (A) **S 84**; Part 2: Epicentral Responses (81-APM-5) (A) **S 83**; Part 3: General Responses (81-APM-6) (A) **S 83**
Cerkinge, H. M. Fate and Threat of Oil Slicks in the Arabian Gulf (80-ENAs-10) (A) **Mr 111**
Cermak, J. E. *(editor)* Wind Engineering: Proceedings of the 5th International Conference on Wind Engineering (CB) **D 102**
Cerniak, S. The Toroidal Drive **F 32**
Certification Programs
SME Certification Programs (EN) **N 95**
Cervantes de Gortari, J. The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-13) (A) **My 86**
Cess, R. D. Impact of a Global Warming on Biospheric Sources of Methane and its Climatic Consequences (80-WA/HT-2) (A) **Ap 103**; Response of the Global Climate to Changes in Atmospheric Chemical Composition Due to Fossil Fuel Burning (80-WA/HT-3) (A) **Ap 103**
Challenging Space Missions
Space: The Next 25 Years (BTR) **F 50**
Chalmers, H. The Motion Compensation Deck Handling System for the Remote Unmanned Work Systems (80-WA/OCE-11) (A) **Ap 97**
Chambers, A. J. Comparison of Profiles and Fluxes of Heat and Momentum Above and Below an Air-Water Interface (80-WA/HT-68) (A) **Ap 107**
Chambers, A. K. A Furnace Wall Ash Monitoring System for Coal Fired Boilers (80-WA/Fu-1) (A) **F 127**
Chamis, C. C. Superhybrid Composite Blade Impact Studies (81-GT-24) (A) **Je 106**
Chan, P. C. T. The Effect of Gravity on Certain Curved Channel Potential Flows (81-FE-19) (A) **S 82**
Chan, S. H. Thermal Radiation Properties of ThO_2 in Contact with Sodium and Steel (81-HT-66) (A) **O 96**
Chan, T. HTGR-GT and Electrical Load Integrated Control (80-WA/DSC-25) (A) **Mr 116**
Chandrasekaran, K. Asymmetric Free Vibrations of Layered Conical Shells (81-DET-68) (A) **D 90**
Chang, C. S. A Model for the Analysis of Air Heater Vibrations (81-DET-34) (A) **O 103**
Chang, P. T. Application of Lifting Line Theory to Streamsurface Theory in Subsonic Flow (81-GT-166) (A) **JI 86**
Channel Flows
Heat Transfer in Developing MHD Channel Flows in an Inclined Magnetic Field (80-WA/HT-12) (A) **Ap 104**
Mixed Convection in Rectangular Channel Flow with Smooth Surfaces and One Heated Wall (81-HT-6) (A) **S 88**
Chao, S. L. An Experimental Study of a Closed Two-Phase Thermosyphon for Ice Production (81-HT-16) (A) **O 94**
Chao, W. C. Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) (A) **S 85**
Chaotic Motions
Experiments on Chaotic Motions of a Forced Nonlinear Oscillator: Strange Attractors (80-WA/APM-2) (A) **Ja 99**
Chapman, C. Storm Over S-T View (C) **Ja 50**
Chapman, J. N. MHD Steam Power—Promise, Progress, and Problems **S 30**
Char
On the Spectral Emissivity of Pulverized Coal and Char (81-HT-23) (A) **O 94**
Chari, P. S. Optimum Bearing-Support Damping for Rotor-Bearing Systems for Maximum Stable Operating Speed Range (81-DET-69) (A) **O 104**
Chase, K. W. Computer Aided Design of Disk Cams from Numerical Follower Motion Data (80-WA/DSC-9) (A) **Mr 115**; Computer-Aided Design of Precision Control Linkages in the Classroom (80-WA/DSC-39) (A) **Mr 117**
Chasen, S. H. Historical Highlights of Interactive Computer Graphics **N 32**
Chassis Transient Cycle
Emissions from Gasoline and Diesel Delivery Trucks by Chassis Transient Cycle (81-DGP-6) (A) **My 87**
Chatter
Special Aspects of Chatter in Milling (81-DET-18) (A) **D 89**
Chaturvedi, G. K. Bearing Fault Detection Using Adaptive Noise Cancelling (81-DET-7) (A) **D 88**
Chaturvedi, K. Analysis of Two-Phase Flow Solar Collectors with Application to Heat Pumps (80-WA/Sol-32) (A) **Ap 94**
Chauvin, J. Theoretical Study of Flow Instabilities and Inlet Distortions in Axial Compressors (81-GT-211) (A) **JI 90**
Che, S. C. Application of Coal Flash Pyrolysis to Industrial Power Generation (81-IPC-Fu-4) (A) **D 101**
Chemical Feedstocks
Methanol—The Efficient Conversion of Valueless Fuels into a Versatile Fuel and Chemical Feedstock (81-PID-1) (A) **My 86**
Chemical Industry
Biomass for the Chemical Industry (BTR) **D 59**
Chemical Processes
An Adaptive Dead Time Compensator for Process Control (80-WA/DSC-10) (A) **Mr 115**
An Analytical Examination of the Behavior of Oil Sand Fragments in Heated Streams (80-WA/HT-33) (A) **Ap 105**
Chemical Reactions
Laser Chemistry (ES) **D 25**
Chemical Reactor Vessels
Embrittlement of 1¼ Cr- ½ Mo Steels in High-Temperature Service (81-Mat-3) (A) **O 102**
Chemical Technology
Chemically Induced Slagging to Improve Superheat/Reheat Temperature (80-JPGC/Fu-1) (A) **Ja 98**
Chen, F. Y. Assessment of the Dynamic Quality of a Class of Dwell-Rise-Dwell Cams (80-DET-83) (A) **Mr 108**; Numerical Scheme for Determining the Pressure Angle and Radius of Curvature of Cams (80-DET-70) (A) **Mr 107**
Chen, H. M. Fan/Foundation Interaction—A Simplified Calculation (80-JPGC/Pwr-10) (A) **F 117**
Chen, J. C. Parametric Effects on Vapor Non-Equilibrium in Post-Dryout Heat Transfer (80-WA/HT-50) (A) **Ap 107**
Chen, S. J. Experimental Determination of Transition Reynolds Number for Unsteady Film Cooling (81-GT-94) (A) **Je 111**
Chen, S. S. Instability Mechanisms and Stability Criteria of a Group of Circular Cylinders Subjected to Cross-Flow—Part I: Theory (81-DET-21) (A) **N 104**; Part II: Numerical Results and Discussions (81-DET-22) (A) **N 105**
Chen, W. *(author)* The Year of the Robot (CB) **JI 92**
Cheng, P. An Experimental Investigation of Free Convection About a Heated Inclined Surface in a Porous Medium (81-HT-85) (A) **O 99**
Chenoweth, J. M. Flow-Induced Tube Vibration Tests of Typical Industrial Heat Exchanger Configurations (81-DET-37) (A) **O 104**
Cheung, T. K. Comparison of Profiles and Fluxes of Heat and Momentum Above and Below an Air-Water Interface (80-WA/HT-68) (A) **Ap 107**
Chiang, C. H. Analytical Synthesis of Four-Bar Function Generators to Match Prescribed Differential Coefficients (80-DET-33) (A) **F 120**
Chiang, C. W. Forced Ventilation Envelope House: Computer Simulations (80-WA/Sol-5) (A) **Ap 92**; Nocturnal Radiation from a Solar Collector (80-WA/Sol-35) (A) **Ap 95**; Solar Brayton Cycle for Heating and Cooling (80-WA/Sol-33) (A) **Ap 95**
Chiang, Y. F. Analysis of Two-Phase Flow Solar Collectors with Application to Heat Pumps (80-WA/Sol-32) (A) **Ap 94**
Chiappetta, L. A Study of External Fuel Vaporization (81-GT-158) (A) **JI 86**
Chiappetta, L. M. A Heat Exchanger Computational Procedure for Temperature-Dependent Fouling (81-HT-75) (A) **O 98**
Chih-Hsin, C. Application of the Theory of Conjugate Surfaces in Mechanisms Design: Part 1—General Concepts (80-DET-29) (A) **F 120**
Childs, D. W. Fractional-Frequency Rotor Motion Due to Nonsymmetric Clearance Effects (81-GT-145) (A) **JL 84**; A Note on Critical-Speed Solutions for Finite-Element-Based Rotor Models (81-DET-50) (A) **N 105**
Chip Segmentation
On the Mechanics of Chip Segmentation in Machining (80-WA/Prod-3) (A) **My 82**
Chipping Hammers
Sources of Noise Produced During Pneumatic Chipping Hammer Operation (80-WA/NC-11) (A) **F 124**
Chipra, R. J. On the Dynamic Simulation of Large Nonlinear Mechanical Systems: Part I—An Overview of the Simulation Technique. Substructuring and Frequency Domain Consideration (80-DET-66) (A) **Mr 107**; Part II—The Time Integration Technique and Time Response Loop (80-DET-67) (A) **Mr 107**
Chisels
Sources of Noise Produced During Pneumatic Chipping Hammer Operation (80-WA/NC-11) (A) **F 124**
Chittenden, W. A. Elections to Fellow Grade **N 102**
Chiu, R. P. Mechanical, Thermal and Hydraulic Design of a Composite Construction Water-Cooled Gas Turbine Nozzle (81-JPGC-GT-3) (A) **D 95**
Cho, K. H. Process Design Conditions for Boiler Blowdown System (81-PVP-37) (A) **Ag 82**
Cho, S. K. LDA Measurement of Droplet Behavior Across Tie Plate During Dispersed Flow Portion of LOCA Reflood (80-WA/NE-4) (A) **Ja 96**
Cho, U. W. Creep and Creep Recovery of 304 Stainless Steel Under Combined Stress With a Representation by a Viscous-Viscoelastic Model (80-WA/APM-10) (A) **Ja 100**
Chockie, L. J. Elections to Fellow Grade **My 80**
Choi, M. K. Thermal and Economic Assessment of Ground-Coupled Storage for Residential Solar Heat Pump Systems (80-WA/Sol-10) (A) **Ap 93**
Choked Flow Rate
Flow Through Axially Aligned Sequential Apertures of the Orifice and Borda Types (81-HT-79) (A) **O 99**
Chou, D. C. Sound Transmission Through a Cylindrical Pipe Wall (80-WA/NC-3) (A) **F 123**
Choubey, M. Optimum Sensitivity Synthesis of a Cam System Incorporating Manufacturing Tolerances (80-DET-31) (A) **F 119**
Chouchan, D. Small-Scale Observations of Wind Effects Penetration in the Open Sea (80-WA/HT-66) (A) **My 85**
Chow, G. C. A Study of Valve Noise Generation Processes for Compressible Fluids (80-WA/NC-15) (A) **F 125**
Chow, L. C. Effects of Wall Conduction on Heat Transfer for Turbulent Flow in a Circular Tube (81-HT-30) (A) **O 95**
Chow, W. L. The Effect of Gravity on Certain Curved Channel Potential Flows (81-FE-19) (A) **S 82**; The Study of Sluice Gate and Sharp-Crested Weir Through Hodograph Transformations (81-APM-23) (A) **S 85**
Chraplyvy, A. R. Diagnostic Measurements of Fuel Spray Dispersion (80-WA/HT-35) (A) **Ap 105**
Christensen, R. M. A Nonlinear Theory of Viscoelasticity for Application to Elastomers (80-WA/APM-18) (A) **Ja 100**
Christensen, R. N. Mixed Convection in Rectangular Channel Flow with Smooth Surfaces and One Heated Wall (81-HT-6) (A) **S 88**

Christopher, D. M. Parametric Analysis of Louvered Air-Heating Solar Collectors (80-WA/Sol-38) (A) **Ap 95**

Christopher, H. *(author)* Geothermal Energy: Its Past, Present and Future Contributions to the Energy Needs of Man (CB) **F 128**

Chu, A. W. A PWR Secondary System Behavior for Postulated Pipe Rupture (80-WA/NE-1) (A) **Ja 96**

Chu, E. K. Recent Pilot-Scale Development of a Low-NO_X, "Air-on-Wall" Corner-Fired Combustion System (81-JPGC-APC-4) (A) **D 100**

Chu, F. H. A Direct Integration Technique for the Transient Analysis of Rotating Shafts (81-DET-56) (A) **D 89**

Chu, Li-C. Reynolds Number and Ambient Turbulence Effects on the Nearfield Mean Characteristics of a Laboratory Model Thermal Plume (81-FE-7) (A) **S 81**

Chu, V. H. Transition From a Turbulent Jet into a Turbulent Plume (81-FE-29) (A) **S 82**; Turbulent Wakes in Shallow Waters (81-FE-13) (A) **S 81**

Chuah, K. B. Roughness Characteristics of Plane Surfaces Based on Velocity Similarity Laws (81-FE-34) (A) **S 83**

Chuang, J. C. Implementation of Solution Rectification Techniques in an Interactive Linkage Synthesis Program (80-DET-91) (A) **Mr 109**

Chung, B. T. F. A Formulation for Radiative View Factors from Spheres to a Class of Axisymmetric Bodies (80-WA/HT-58) (A) **Ap 107**; Radiation Configuration Factors Between Disks and a Class of Axisymmetric Bodies (81-HT-56) (A) **O 97**

Chung, I. S. Application of Euler Parameters to the Dynamic Analysis of Three-Dimensional Constrained Mechanical Systems (81-DET-123) (A) **D 91**

Chung, J. S. Vibrations of Long Marine Pipes Due to Vortex Shedding (81-Pet-29) (A) **My 91**

Chung, T.-T. Analytical Synthesis of Four-Bar Function Generators to Match Prescribed Differential Coefficients (80-DET-33) (A) **F 120**

Ciliberti, D. F. High Temperature Removal of Alkali and Particulates in Pressurized Gasification Systems (81-GT-67) (A) **Je 109**

Cincotta, G. A. Test Verification of Water Cooled Gas Turbine Technology (81-GT-66) (A) **Je 109**

Cipolla, R. C. Significance of Centerline Lack-of-Penetration Defects in Double Seam-Welded SA-312 Pipe (81-PVP-33) (A) **Ag 81**

Circular Arcs
Complex Number Synthesis of Four-Bar Path Generating Mechanisms Adjustable for Multiple Tangential Circular Arcs (80-DET-77) (A) **Mr 108**

Circular Cutters
Surface Geometry of Circular Cut Spiral Bevel Gears (81-DET-114) (A) **D 92**

Circular Cylinders
The Effects of Roughness and Shear on Vortex Shedding Cell Lengths Behind a Circular Cylinder (81-FE-24) (A) **S 82**

Fluidelastic Instability of an Infinite Double Row of Circular Cylinders Subject to a Uniform Crossflow (81-DET-24) (A) **D 89**

Heat Transfer in a Periodic Boundary Layer Near an Axisymmetric Stagnation Point on a Circular Cylinder (81-GT-92) (A) **Je 112**

Instability Mechanisms and Stability Criteria of a Group of Circular Cylinders Subjected to Cross-Flow—Part I: Theory (81-DET-21) (A) **N 104**; Part II: Numerical Results and Discussions (81-DET-22) (A) **N 105**

Phase Change Around a Circular Cylinder (80-WA/HT-5) (A) **Ap 103**

Circular Inclusion
Crack Path Prediction for a Kinked Crack in the Neighborhood of a Circular Inclusion in an Infinite Medium (81-APM-31) (A) **S 85**

Circular Saws
Circular Saw Vibration Control by Induction of Thermal Membrane Stresses (80-WA/Prod-8) (A) **My 82**

Circular Tubes
Effects of Wall Conduction on Heat Transfer for Turbulent Flow in a Circular Tube (81-HT-30) (A) **O 95**

Numerical Study of Turbulent Droplet Flow Heat Transfer (80-WA/HT-48) (A) **Ap 106**

Circulating Water System
Design and Operating Aspects of Campbell Plant Circulating Water System (80-JPGC/Pwr) (A) **F 117**

City Buildings
New York Begins Major Energy Conservation Program in City Buildings (NR) **Jl 72**

Civil Aircraft Engines
Full-Authority Digital Electronic Controls for Civil Aircraft Engines (81-GT-139) (A) **Jl 85**

Civil Service
Staffing the Civil Service (WW) **Je 94**

Clad Steels
Clad Steels (C) **Jl 46**

Cladding
Evaluation of INCOCLAD 671/800 H Tubing After Nine Years of Reheater Service in a Coal-Fired Utility Boiler (80-WA/Fu-6) (A) **F 127**

Clamp-Induced Stresses
Classification of Clamp-Induced Stresses in Thin-Walled Pipe (81-PVP-17) (A) **Ag 80**

Clamps
Lock for Hydraulic Actuators (BTR) **Jl 49**

Clams
The Incredible Mussel (BTR) **Jl 51**

Clark, G. On-Site Quality Control of Insolation Measurements (80-WA/Sol-25) (A) **Ap 94**

Clark, J. A. Elections to Fellow Grade **Mr 103**

Clark, W. D. Bench Scale Testing of Low-NO_X LBG Combustors (81-GT-59) (A) **Je 109**

Clark, W. G., Jr. Procedures for Estimating the Probability of Steam Turbine Disc Rupture from Stress Corrosion Cracking (81-JPGC-Pwr-31) (A) **D 92**

Clarkson, B. L. Experimental Determination of Vibration Parameters Required in the Statistical Energy Analysis Method (81-DET-19) (A) **N 104**

Class U Wheel Steel
Cyclic Behavior of Class U Wheel Steel (80-WA/RT-9) (A) **F 126**

Clayton, F. L., Jr. Elections to Fellow Grade **Ag 74**

Clean Air
EEI Clean Air Act Amendments Affecting Stationary Sources (81-JPGC-APC-3) (A) **D 100**

Cleaning Systems
Continuous Condenser Tube Cleaning—An Update (81-JPGC-Pwr-13) (A) **N 111**

Cleaning Water
Cleaning Water Without Chemicals (EN) **My 71**

Clearances
Optimal Synthesis of Tolerance and Clearance in Function Generating Mechanisms—A Parametric Programming Problem (81-DET-5) (A) **O 102**

Cleveland, A. Design Concepts and Equipment Selection Processes for Northern Compressor Stations (81-GT-131) (A) **Jl 84**

Climate Changes
Climate Clues from Ocean Depths (BTR) **My 47**

Closed Chains
Control of Force Distribution in Robotic Mechanisms Containing Closed Kinematic Chains (80-WA/DSC-32) (A) **Mr 116**

Closed-Cycle Gas Turbines
Closed-Cycle Gas Turbine Applications for Fusion Reactors (81-GT-17) (A) **Je 105**

Coal-Fired Heaters for CCGT Cogeneration Service (81-GT-212) (A) **Jl 90**

Frequency Control with Closed-Cycle Gas Turbines in an Interconnected Electric Grid (80-WA/GT-5) (A) **Ap 102**

LNG Cogeneration Power Stations (80-JPGC/Pwr-11) (A) **F 117**

Preliminary Design of Dry Cooling Tower for the Closed Cycle Gas Turbine HTGR (81-GT-20) (A) **Je 105**

Closed-Die Forgings
Upper Bound Analysis of Axisymmetric, Closed-Die Forgings (80-WA/Prod-1) (A) **My 84**

Closed Ecological Systems
A Chamber Design for Closed Ecological Systems Research (81-ENAs-37) (A) **O 100**

Closed-Ecology Life Support System
An Approach to the Preliminary Evaluation of Closed-Ecology Life Support System (CELSS) Scenarios and Control Strategies (81-ENAs-38) (A) **O 101**

Closed Environments
A Monitor for Atmospheric Composition and Contaminants in Closed Environments (80-ENAs-35) (A) **Mr 113**

Closed Form Solution
A New Solution to Coulomb Friction in Mechanism Bearings: Theory and Application (80-DET-52) (A) **Mr 103**

Closed Systems
Ion-Exchange Chromatography Separation Applied to Mineral Recycle in Closed Systems (81-ENAs-21) (A) **O 100**

The Potential Role of Aerobic Biological Waste Treatment in Regenerative Life Support Systems (81-ENAs-20) (A) **S 87**

Wet Oxidation as a Waste Treatment in Closed Systems (81-ENAs-22) (A) **O 100**

Closure Joints
Cold Springing of Piping Systems (81-PVP-26) (A) **Ag 81**

Cloud, R. L. Failure of a High-Pressure Vessel in Ammonia Service (81-PVP-8) (A) **Ag 79**

Clouds
The Effects of Clouds in Modeling Solar Radiation (80-WA/Sol-23) (A) **Ap 94**

Clutches
New Friction Plate Clutch (IF) **N 83**

Coaker, J. W. No Man Is an Island (80-WA/Mgt-5) (A) **Je 103**

Coakley, D. B. Metric Meditations (C) **Ag 42**

Coal
The Appalachian Connection (ES) **My 18**
Coal on the Comeback (ES) **Jl 19**
Coal-Fired Ships (ES) **O 26**
Coal Pyrolysis (ES) **S 25**
Combustion: Fossil Power Systems (CB) **N 116**
CT-Scanned Combustion (BTR) **Je 66**
Don't Cold-Shoulder Coal (C) **My 42**
Gas Turbine Materials Evaluation Program Utilizing Coal Derived Gaseous Fuel (81-GT-65) (A) **Je 108**
Gasification of Coal for Cooperative Industrial Use (81-IPC-Fu-1) (A) **D 101**
Heat Transfer and Reaction Rate in Steam Gasification of Coal (80-WA/HT-14) (A) **Ap 104**
High Energy, High Purity (ES) **My 19**
Integrated Environmental Control for Coal-Fired Power Plants (NR) **Ap 68**
At the JPGC: Environmentally Safe Energy Production (NR) **D 68**
KILn GAS Coal Gasification: An Idea Whose Time Has Come (81-JPGC-Fu-5) (A) **D 94**
MHD Steam Power—Promise, Progress, and Problems **S 30**
Mining Without Men Going Undergound (81-Pet-21) (A) **My 90**
Mixing and Gasification of Coal in an Entrained Flow Gasifier (80-WA/HT-30) (A) **Ap 105**
Moving Right Along (ES) **D 25**
The Potential for Use of Peat Blends with Coal for Electric Power Generation (81-JPGC-Fu-2) (A) **D 93**
A Prism Effect (ES) **O 27**
Repowering with Coal (81-JPGC-GT-9) (A) **D 95**
Solar, Nuclear, Coal, Synfuels Proponents Propose Diverse Energy Solutions (NR) **S 64**
Storm Over S-T View (C) **Ja 51**
Use of Freeze Conditioning Agents and a Thawing Product on Coal (80-JPGC/Fu-5) (A) **Ja 98**

Coal-Air Mixture
The Effects of a Volatile Fireside Manganese Additive on Coal-Fired Utility Boiler Operation (80-JPGC/Fu-4) (A) **Ja 98**

Coal Ash
Chemically Induced Slagging to Improve Superheat/Reheat Temperature (80-JPGC/Fu-1) (A) **Ja 98**

Coal Ash Particles
Improved Particle Trajectory Calculations Through Turbomachinery Affected by Coal Ash Particles (81-GT-53) (A) **Je 108**

Coal-Based Fuels
Slow-Speed Two-Stroke Diesel Engine Tests Using Coal-Based Fuels (81-DGP-12) (A) **My 88**

Coal Cars
Unit Train Coal Car Design Considerations (81-RT-3) (A) **Ag 77**

Coal Combustion
TRW Backs MHD (ES) **Jl 19**

Coal Conversion
Application of Coal Flash Pyrolysis to Industrial Power Generation (81-IPC-Fu-4) (A) **D 101**
Coal-Based Energy Sources (BTR) **Ja 62**
Coal Liquefaction (IF) **Ap 67**
Coal Cutting
An Investigation of the Mechanics and Noise Associated with Coal Cutting (80-WA/NC-1) (A) **F 123**
Coal-Derived Gas
Controlled Combustion of a Varying Low-Btu Coal-Derived Gas (81-GT-134) (A) **Jl 85**
Materials Exposure Test Facilities for Varying Low-Btu Coal-Derived Gas (81-GT-170) (A) **Jl 87**
Coal Dust
Car Runs on Coal Dust (NB) **Ag 63**
Novel Fuel Cell (IF) **N 83**
Coal Export Contracts
No Waiting in Line (ES) **D 25**
Coal Feeders
A Closer Look at Gravimetric Feeder Design Using Load Cells (80-JPGC/Pwr-13) (A) **F 117**
Coal-Fired Boilers
Evaluation of INCOCLAD 671/800 H Tubing After Nine Years of Reheater Service in a Coal-Fired Utility Boiler (80-WA/Fu-6) (A) **F 127**
A Furnace Wall Ash Monitoring System for Coal Fired Boilers (80-WA/Fu-1) (A) **F 127**
Coal Fired Furnaces
Coal Ash Fouling Test in a Laboratory Furnace (81-JPGC-Fu-8) (A) **D 93**
Coal-Fired Heaters
Coal-Fired Heaters for CCGT Cogeneration Service (81-GT-212) (A) **Jl 90**
Coal Fired Plants
Coal-Fired Unit Size Selection . . . Is Bigger Better? (81-JPGC-Pwr-34) (A) **D 93**
Coal-Fired Power Plants
Advances in Environmental Control Technology for Coal-Fired Power Plants (81 JPGC-APC-2) (A) **D 100**
Reliability Assessment of Advanced Coal-Fired Power Systems (81-JPGC-GT-1) (A) **D 94**
Coal-Fired Ships
Ahoy Coal-Fired Ships! (ES) **O 27**
Coal-Fired Systems
On Heat Balance in Coal-Fired MHD Systems, Channel Heat Transfer and Electrode Temperature Distribution (80-WA/HT-11) (A) **Ap 103**
Coal Firing
Industrial Power for the 80s: The Turn to Coal **Ja 78**
Coal Gasification
Advanced Fossil Fuel Systems (ES) **S 24**
Coal Gasification Milestone (ES) **Ap 29**
Coal Gasification in Utah (ES) **Ag 21**
Coal Gasifier Lining (ES) **S 25**
Fuel Gas From Coal—Industrial Applications (81-IPC-Fu-3) (A) **D 101**
The Partial Coal Gasification Combined Cycle Power Plant (81-JPGC-GT-2) (A) **D 95**
Synfuels Development (ES) **Mr 36**
Coal Gasifier
Trigeneration (ES) **Mr 36**
Coal Liquefaction
Coal Liquefaction Pilot Plant Processing Wyoming Coal (BTR) **D 61**
Coal Liquids
Flash Pyrolysis (ES) **Mr 36**
Coal Mining
A Role for Boeing in Coal (ES) **Ja 21**
Coal Mixing
Coal Mixing: System and Equipment Design Considerations (81-JPGC-Pwr-25) (A) **N 113**
Coal Mixtures
Blended Coal (ES) **Ja 21**
Coal-Oil Mixtures
Coal-Oil Mixtures: A Near-Term Approach to Conserving Petroleum (81-Pet-22) (A) **My 90**
Testing the Coal-Oil Combo (ES) **Mr 36**
Coal Particles
Particles with a Track Record (BTR) **Jl 56**
Predicted Burning Times of Nonporous Coal Particles as a Function of Pressure and Particle Size (80-WA/Fu-5) (A) **F 127**
Coal Preparation Program
Magnetic Separation (NB) **N 91**
Coal Pulverizers
Overview of Major Causes of Pulverizer Failures (80-JPGC/Pwr-5) (A) **F 116**
Coal Seams
A Liability to an Asset (ES) **Ja 20**
Coal Slurry
ETSI on Test (ES) **S 25**
Coal Slurry Pipelines
CO_2 Instead of Water (ES) **O 26**
Coal Utilization
Coal-Oil Mixtures: A Near-Term Approach to Conserving Petroleum (81-Pet-22) (A) **My 90**
Superplants for Power Generation: A Way to Improve Coal Utilization (80-WA/CD-2) (A) **Ja 97**
Coal Wastes
Artificial Reefs from Coal Wastes (ES) **Ja 20**
Coal-Water Mixture
Development of a High-Solids, Coal-Water Mixture for Application as a Boiler Fuel (81-JPGC-Fu-4) (A) **D 93**
Coating Systems
Advanced Coating for Gas Turbine Materials (81-GT-85) (A) **Je 111**
Codes
Official Solar Guidelines Approved (NB) **O 77**
Coefficient Equations
The ISO-ASME Orifice Coefficient Equation **Jl 44**
Coffee Decaffeination
Failure Analysis Study of a Steam-Jacketed Pressure Vessel in Coffee Decaffeination Service (81-PVP-7) (A) **Ag 82**
Cogeneration
The American Power Conference, review (NR) **Ag 54**
A Blossoming Market (ES) **Je 25**
Coal-Fired Heaters for CCGT Cogeneration Service (81-GT-212) (A) **Jl 90**
Cogeneration: The Promise is Now **Ag 22**
EBR-11 Gets Cogeneration Status (ES) **Ag 20**
Fuel Effectiveness of Cogeneration (80-JPGC/Pwr-8) (A) **F 116**
Retrofitting Utility Power Plants for Cogeneration Using Crossover Pressure Control (81-JPGC-Pwr-33) (A) **D 93**
Cogeneration Facility
Atom Plant Certified as Cogeneration Facility (BTR) **My 49**
Cogeneration Plants
Optimization Design Considerations for Cogeneration Plants (81-JPGC-GT-7) (A) **D 95**
Coherence Function
Improved Methods for the Fast Fourier Transform (FFT) Calculation of the Frequency Response Function (81-DET-8) (A) **D 88**
Cohn, A. Application of Water Cooling for Improved Gas Turbine Fuel Flexibility and Availability (81-GT-68) (A) **Je 109**; Effect of Water Injection for NO_x Reduction with Synthetic Liquid Fuels Containing High Fuel-Bound Nitrogen in a Gas Turbine Combustor (81-GT-51) (A) **Je 108**; Effects of Vitiation on Axial Catalyst Bed Temperature Profiles (81-GT-141) (A) **Jl 84**
Coiled Bar
Coiled Bar Use on the Increase (BTR) **Je 65**
Coke Oven Walls
Coke Oven Wall Repair (IF) **N 82**
Coking Coal
Coal on the Comeback (ES) **Jl 19**
Colbourne, J. R. The Kinematics of Crossed Helical Gears (80-DET-37) (A) **F 121**
Cold Climates
Phase Change Around a Circular Cylinder (80-WA/HT-5) (A) **Ap 103**
Cold Exchanger Vessel
Failure of a High-Pressure Vessel in Ammonia Service (81-PVP-8) (A) **Ag 79**
Cold Finishers
Coiled Bar Use on the Increase (BTR) **Je 65**
Cold Rolled Steel
On the Mechanics of Chip Segmentation in Machining (80-WA/Prod-3) (A) **My 82**
Cold Spring
Cold Spring in an Existing Refinery (81-PVP-1) (A) **Ag 79**
Design and Erection of Cold Spring Piping for Power Piping Systems (81-PVP-5) (A) **Ag 79**
A Rational Approach to Cold Spring of High-Temperature Piping Systems (81-PVP-42) (A) **Ag 82**
Cold Springing
Cold Springing of Piping Systems (81-PVP-26) (A) **Ag 81**
Coleman, G. C. Testing of the U.S. Solar Pilot Plant Receiver (81-Sol-3) (A) **S 80**
Collard, S. Fatigue and Fracture Analysis of Two Turbine Shafts (81-PVP-27) (A) **Ag 81**
Colle, S. An Integral Equation Approach to Radiative Heat Transfer Between Heat Conducting Solids of Arbitrary Shape (81-HT-73) (A) **O 98**
Collection Subsystem
Regenerable CO_2 Collection for Spacecraft Application (81-ENAs-28) (A) **O 101**
Collectors
"David and Goliath" (ES) **My 19**
Design and Evaluation of a Computer Controlled Solar Collector Simulator (80-WA/Sol-6) (A) **Ap 92**
Design of Solar Cells for Use in Photovoltaic/Thermal Collectors (80-WA/Sol-37) (A) **Ap 95**
Performance of Solar Collectors—An Evaluation of Standard Ratings (80-WA/Sol-1) (A) **Ap 92**
Simple Solar Tracker (BTR) **N 74**
College Graduates
Economic Outlook Promising for Many College Grads (EN) **F 68**
Employment Forecast (EN) **S 73**
College Students
The Co-op Program at Berkeley: Everyone Benefits (EN) **S 74**
Effect of Reduced Federal Aid to Students (EN) **D 79**
Colling, A. K., Jr. Lightside Atmospheric Revitalization System for Space Shuttle Orbiter (81-ENAs-26) (A) **S 87**
Collins, M. F. Water-Cooled Gas Turbine Forged Bucket Development (81-GT-174) (A) **Jl 88**
Colombo, G. V. Advanced Microbial Check Valve Development (81-ENAs-45) (A) **S 88**
Colosimo, D. D. The Rebirth of the Rankine Cycle **Ja 41**
Columbia
Shuttle Astronauts Honored at White House (NR) **Jl 70**
Columbia Program
University-Industry Program at Columbia (EN) **F 68**
Combined-Cycle Plants
Power Generation Efficiency (IF) **D 65**
Combined Cycles
Blading Heat Transfer Considerations in a Reheat-Gas-Turbine Combined Cycle (81-GT-155) (A) **Jl 86**
Comparison of the HTTT Reheat-Gas-Turbine Combined Cycle with the HTTT Nonreheat Gas-Turbine Combined Cycle (81-GT-69) (A) **Je 109**
Economics of Heavy Fuels in Gas Turbines and Combined Cycles (81-GT-45) (A) **Je 107**
MS9001E—A New 100-MW Gas Turbine (81-GT-31) (A) **Je 106**
Outline of Plan for Advanced Research Gas Turbine (81-GT-28) (A) **Je 107**
The Partial Coal Gasification Combined Cycle Power Plant (81-JPGC-GT-2) (A) **D 95**
Combined Loading
A Rapid Determination of Journal Bearing Characteristics Under Combined Loading (80-DET-62) (A) **Mr 107**
Combustion
The AFBC Process (ES) **S 24**
Application of Scaling in Afterburner Test and Development (81-GT-194) (A) **Jl 89**
The CIVIC—A Concept in Vortex Induced Combustion, Part II (81-GT-12) (A) **Je 105**
Combustion: Fossil Power Systems (CB) **N 116**
Combustion of Methanol and Liquefied Butane in a Gas Turbine Combustor (81-GT-50) (A) **Je 108**
Controlled Combustion of a Varying Low-Btu Coal-Derived Gas (81-GT-134) (A) **Jl 85**
CT-Scanned Combustion (BTR) **Je 66**
Effects of Vitiation on Axial Catalyst Bed Temperature Profiles (81-GT-141) (A) **Jl 84**
Emission Control (ES) **Ag 21**
Joint ASME/ASCE Mechanics Conference, review (NR) **S 62**
Mechanisms and Characteristics of Combustion of Water-in-Oil Emulsion Sprays (80-WA/HT-36) (A) **Ap 105**

Methanol Combustion in a 26-MW Gas Turbine (81-GT-64) (A) **Je 109**
Optimization of Gas Turbine Cycles with Variable Number of Combustion, Compressor, and Inter-Cooler Stages (81-JPGC-GT-6) (A) **D 95**
Thirty Percent Fuel Saving by Adding Combustion Within Gas Turbine (81-JPGC-GT-4) (A) **D 94**
Ultra-Lean Combustion at High Inlet Temperatures (81-GT-44) (A) **Je 107**

Combustion Chambers
The Design and Performance of a Sturdy Industrial Combustion Chamber for a 14-MW Gas Turbine (81-GT-48) (A) **Je 108**

Combustion Engines
Error Analysis in Evaluating the Mechanical Efficiency of Reciprocating Internal Combustion Engines (81-DGP-10) (A) **My 88**

Combustion Gas Turbines
Evaluation of the Impact on CGT Operation when Converting to Crude Oil Fuel (81-GT-207) (A) **Jl 89**

Combustion Modification
Emission Reduction by Combustion Modification in Two Stroke Spark Ignited Gas Engines and by Catalytic Conversion (81-DGP-7) (A) **My 87**

Combustion Pot
A Mathematical Model of a Combustion Pot: Comparison of Theory and Experiment (80-WA/HT-32) (A) **Ap 105**

Combustion Systems
Low NO_x Combustion Systems for Burning Heavy Residual Fuels and High-Fuel-Bound Nitrogen Fuels (81-GT-109) (A) **Je 113**
Pattern Factor Improvement in the F-100 Primary Combustion System (81-GT-25) (A) **Je 105**
Prediction of NO_x Emissions (81-GT-119) (A) **Je 114**
Recent Pilot-Scale Development of a Low-NO_x, "Air-on-Wall" Corner-Fired Combustion System (81-JPGC-APC-4) (A) **D 100**

Combustion Tests
Development of a High-Solids, Coal-Water Mixture for Application as a Boiler Fuel (81-JPGC-Fu-4) (A) **D 93**

Combustion Turbine Blading
Turbine Blades for Synfuels (ES) **O 27**

Combustion Turbine Engine
The Westinghouse 501D Combustion Turbine Engine (81-GT-32) (A) **Je 106**

Combustion Turbines
Repowering with Coal (81-JPGC-GT-9) (A) **D 95**

Combustor Liner
Air-Film Cooling Returns to Ramjets (81-ENAs-8) (A) **S 86**

Combustors
Bench Scale Testing of Low-No_x LBG Combustors (81-GT-59) (A) **Je 109**
Design and Preliminary Results of a Fuel Flexible Industrial Gas Turbine Combustor (81-GT-108) (A) **Je 113**
Development of a Low-NO_x Lean Premixed Annular Combustor (81-GT-40) (A) **Je 106**
Development of a Small-Scale Catalytic Gas Turbine Combustor (81-GT-43) (A) **Je 106**
Hot Gas Cleanup Program for Pressurized Fluidized Bed Combustor Combined Cycle Power Generation (81-JPGC-GT-5) (A) **D 95**
Impacts of Broadened-Specification Fuels on Aircraft Turbine Engine Combustors (81-GT-2) (A) **Je 104**
Low Emissions Silo Combustor (81-GT-46) (A) **Je 107**

Commerce
Energy Conservation in Commerce and Industry (STV) **Je 95**

Commercial Aircraft Flight Stations
Aircraft of the Future (NB) **O 76**

Commercial Buildings
Energy Management Systems (BTR) **F 52**

Commercial Engines
Commercial Engine Logistics Cost Projections—A Dynamic and Flexible Approach (81-GT-114) (A) **Je 113**

Commercial Pipes
Sound Transmission Through a Cylindrical Pipe Wall (80-WA/NC-3) (A) **F 123**

Commercial Power Stations
The Role of Planning and Scheduling: Construction vs. Startup for Commercial Power Stations (81-JPGC-Pwr-12) (A) **N 111**
Steam Blowing Acceptance Criteria: It's Time a Valid Criterion Exists for Commercial Power Stations (80-JPGC/Pwr-3) (A) **F 116**

Comninou, M. Stability Considerations in Thermoelastic Contact (80-WA/APM-25) (A) **Ja 102**

Compartment Models
Stochastic Properties of Compartment Models (80-WA/DSC-37) (A) **Mr 117**

Compensators
An Adaptive Dead Time Compensator for Process Control (80-WA/DSC-10) (A) **Mr 115**

Competent Workers
The Competence Game: How to Find, Use, and Keep Competent Employees (CB) **O 106**

Completion Sensitivity
Application of Production Systems Analysis to Determine Completion Sensitivity on Gas Well Production (81-Pet-13) (A) **My 89**

Complex Chain
Linkage Characteristic Polynomials: Assembly Theorems, Uniqueness (80-DET-9) (A) **F 118**

Complex Modal Method
Balancing of Flexible Rotors by the Complex Modal Method (81-DET-46) (A) **D 89**

Compliant Fingers
Compliant Transducer Measures Artery Profile (BTR) **Ap 61**

Component Development
Material, Design, and Test Aspects of Ceramic Component Development (81-GT-179) (A) **Jl 88**

Component Mode Synthesis
Transient Analysis of Rotor-Bearing Systems Using Component Mode Synthesis (81-GT-110) (A) **Je 112**

Composite Beams
On the Stability of a Composite Beam With Initial Stress to Moving Loads (81-APM-25) (A) **S 85**

Composite Construction
Mechanical, Thermal and Hydraulic Design of a Composite Construction Water-Cooled Gas Turbine Nozzle (81-JPGC-GT-3) (A) **D 95**

Composite Layups
Contour-Measuring Tool for Composite Layups (BTR) **My 50**

Composite Material
On-Line Hole Quality Evaluation for Drilling Composite Material Using Dynamic Data (80-WA/Prod-16) (A) **My 83**

Compressible Flow
Analysis and Asymptotic Solutions Compressible Turbulent Corner Flow (81-GT-149) (A) **Jl 86**

Compressible Fluids
A Study of Valve Noise Generation Processes for Compressible Fluids (80-WA/NC-15) (A) **F 125**

Compression Stages
Optimization of Gas Turbine Cycles with Variable Number of Combustion, Compressor, and Inter-Cooler Stages (81-JPGC-GT-6) (A) **D 95**

Compressor Cascades
A Method for the Calculation of the Wall Layers Inside the Passage of a Compressor Cascade With and Without Tip Clearance (81-GT-168) (A) **Jl 87**

Compressor Rotors
Aerodynamic Design and Testing of an Improved First-Stage Compressor Rotor for a Heavy-Duty Gas Turbine (81-GT-135) (A) **Jl 85**
Rotor Wake Mixing Effects Downstream of a Compressor Rotor (81-GT-98) (A) **Je 111**

Compressor Stations
Re-Examination of Design Criteria for Natural Gas Compressor Station "Ravenstein"—Holland (81-GT-188) (A) **Jl 88**

Compressors
Analysis and Identification of Subsynchronous Vibration for a High Pressure Parallel Flow Centrifugal Compressor (81-DET-57) (A) **N 105**
A Blockage Model for Centrifugal Compressor Impellers (81-GT-11) (A) **Je 105**
Effect of Casing Treatment on Performance of a Three-Stage L. P. Compressor (81-GT-159) (A) **Jl 86**
Equivalent Performance Testing of Multisection Compressors (81-GT-150) (A) **Jl 86**
An Investigation of Axial Compressor Rotor Aerodynamics (81-GT-56) (A) **Je 108**
A Model for Dynamic Loss Response in Axial-Flow Compressors (81-GT-154) (A) **Jl 86**
New Features in the Design of Axial-Flow Compressors with Tandem Blades (81-GT-113) (A) **Je 113**
Process Centrifugal Compressor Efficiency Improvement (80-WA/GT-2) (A) **Ap 102**
Refrigerating Gas Turbine Compressor Air Intake (81-GT-176) (A) **Jl 88**
A Simple Method for Compressor Stall Cell Propagation (81-GT-73) (A) **Je 110**
Stalling Pressure Rise Capability of Axial Flow Compressor Stages (81-GT-3) (A) **Je 104**
Turbulence Characteristics in the Annulus-Wall Boundary Layer and Wake Mixing Region of a Compressor Rotor Exit (81-GT-148) (A) **Jl 85**
The Use of Mathematical Modeling in the Analysis of Gas Turbine Compressor Unit Test Data (81-GT-217) (A) **Jl 91**

Compulsated Pulsed Alternator
'Compulsator' Developed at UT (EN) **MR 82**

Compulsator
'Compulsator' Developed at UT (EN) **Mr 82**

Computation Time
Design Method to Improve the Performance of Two-Dimensional Motion Control (81-DET-120) (A) **N 108**

Computational Mechanics Technology
Series on Computer Programs (TL) **N 114**

Computer-Aided Design
CAD/CAM in Mechanical Engineering (Ed) **N 27**
Constructive Geometry in Three Dimensions for Computer-Aided Design (81-DET-106) (A) **N 107**

Computer-Aided Manufacturing
Robotic Systems Course Draws Big Response (EN) **Je 91**
Who's Eligible for Production Research Grants? (NR) **Ap 75**

Computer-Aided Material
Use of Figures of Merit in Computer-Aided Material and Manufacturing Process Selection (81-DET-103) (A) **N 107**

Computer Analysis
A Simple Numerical Method for the Kinematic Analysis of Spatial Mechanisms (80-DET-23) (A) **F 120**

Computer Codes
Data Analysis and Analytical Predictions of a Steam Generator Tube Bundle Flow Field for Verification of 2-D T/H Computer Code (81-JPGC-NE-1) (A) **N 109**
Engine Dynamic Analysis With General Nonlinear Finite-Element Codes—Part 1: Overall Approach and Development of Bearing Damper Element (81-GT-151) (A) **Jl 85**
Thermal-Hydraulic Differential Sensitivity Theory (80-WA/HT-56) (A) **My 84**

Computer Controlled Process
Application of Adaptive Control to a Computer Controlled Process (80-WA/DSC-40) (A) **Mr 117**

Computer Design
Computer Design of Pneumatic Rock Drills and Mufflers (81-DET-99) (A) **D 91**

Computer Engineering Program
Microprocessor Systems Lab (EN) **Mr 82**

Computer Equipment
SME Grant (EN) **N 95**

Computer Fire Code V
The Calculation of a Fire in a Large Building (81-HT-2) (A) **S 88**

Computer Graphics
Computer Graphics Speeds Car Component Design (BTR) **Ag 46**
1981 Design Technical Conferences (NR) **N 84**
Historical Highlights of Interactive Computer Graphics **N 32**

Computer Graphics Program
Computer Aided Design of Disk Cams from Numerical Follower Motion Data (80-WA/DSC-9) (A) **Mr 115**

Computer Graphics System
Computer-Aided Design (EN) **Ja 74**
MECSYN: An Interactive Computer Graphics System for Mechanism Synthesis by Algebraic Means (80-DET-68) (A) **Mr 107**

Computer Imaging
Computer Imaging Problem Solved (BTR) **N 74**

Computer Model
Alabama Energy Model (ES) **My 18**

Computer Modelling
The CELSS Program; An Overview of its Structure and

Use of Computer Modelling (81-ENAs-36) (A) S 88
Computer Programs
American Can Co. Pledge (EN) D 80
An Interactive Computer Program for Force System Structural and Dimensional Synthesis (80-DET-61) (A) Mr 107
Optimization of High Speed Geneva Mechanisms (80-DET-56) (A) Mr 107
Series on Computer Programs (TL) N 114
A Simplified Computer-Assisted Energy Calculation Procedure for the Evaluation of Building Architectural Concepts (80-WA/DSC-42) (A) Mr 117
Computer Programmers
Computer Programmers/Engineers Top "Most-Wanted List" (NR) F 62
Computer Projections
French, Texas Tech Engineers Exchange Solar Information (EN) My 71
Computer Science Program
Microprocessor Systems Lab (EN) Mr 82
Computer Simulation
A Computer Simulation of a True Position Feature Pattern Gauge (81-DE-9) (A) Ag 78
On the Inverse of a Special Class of Bilinear Systems (80-WA/DSC-13) (A) Mr 115
Probabilistic Models in Computer Automated Slider-Crank Function Generator Design (80-DET-46) (A) F 121
Simulation Experiments of Phase-Change Thermal Systems (80-ENAs-25) (A) Mr 112
Computer Simulators
The ASPEN Simulator (ES) D 25
Computer Standards
Computer Standards: The Need and the Challenge F 40
Computer Technology
The Application of Computer Technology to Distribution (80-WA/MH-14) (A) Ap 97
Computerized Boiler Model
Boiler Heat Transfer Model for Operator Diagnostic Information (81-JPGC-Pwr-14) (A) N 111
Computerized Data Banks
Reinventing the Wheel: The Failure to Utilize Existing Technology Mr 54
Computerized Numerical Control
Robots and Manipulators N 42
Computers
Airships Rise Again; Computers Throughout the Design Function (NR) Je 74
CAD/CAM Center at University of Detroit (EN) My 71
CAD/CAM Consortium (EN) F 67
CAD/CAM Systems and Applications: Projections (NR) AG 61
Computer Aided Analysis and Experimental Verification of a Motorcycle Suspension (81-DET-84) (A) D 90
Computer-Aided Design of Helical Compression Springs: Statically Loaded Springs of Round Wire with Residual Stresses Induced by Presetting Operation (80-DET-69) (A) Mr 107
Computer-Aided Linkage Design Using the LINCAGES Package (81-DET-121) (A) D 92
Computer-Aided Pump Design (IF) N 83
Computer-Aided Reactor Analysis (ES) Ag 21
Comuter Control for Seamless Pipe (IF) Ag 51
Computer Intelligence Design for Automatic Inspection of Steam Generator Tubes (81-NE-2) (A) S 81
The Computer and The Mechanical Engineer: A Coming of Age N 29
Computerizing Process Control (ES) Ag 20
Dashboard CRT's? (NB) Jl 79
"Experts in Failure" Use Computer to Avoid Error (BTR) S 55
Management of Information Systems (CB) Ag 85
MAPS-1: Computer-Aided Design System for Preliminary Material and Manufacturing Process Selection (80-DET-51) (A) Mr 106
Much Ado About CAD/CAM and Robotics (NR) S 68
The Process Computer: Frankenstein or Genie? N 60
Project Whirlwind: The History of a Pioneer Computer (CB) Ag 84
Space Available at International Computer Exhibit (NR) N 88
Using CAD/CAM to Improve Productivity: The IPAD Approach N 84
Comte, A. A Method for the Calculation of the Wall Layers Inside the Passage of a Compressor Cascade With and Without Tip Clearance (81-GT-168) (A) Jl 87
Concentrated Contacts
Regimes of Traction in Concentrated Contact Lubrication (81-Lub-16) (A) D 96
Concentrated Forces
A Semi-Infinite Elastic Strip Bonded to an Infinite Strip (80-WA/APM-13) (A) Ja 100
Concentrating Solar Collectors
AA1 Corporation Receiver Design Experience in Concentrating Solar Collectors (81-Sol-1) (A) S 80
Concentrators
CO_2 Concentrations in a Molten Carbonate Electrochemical Cell (80-ENAs-14) (A) Mr 111
Conceptual Designs
Coal Mixing: System and Equipment Design Considerations (81-JPGC-Pwr-25) (A) N 113
Conceptual Design of 100 Percent External Turbine Bypass Systems (80-JPGC-Pwr-19) (A) F 117
Conceptual Designs and Preliminary Analysis of Structures (CB) N 115
Concerned Scientists
Energy Strategies: Toward a Solar Future (CB) F 128
Concordia, C. More Metric Musings (C) D 57
Concrete Pavements
Moisture Transfer in Concrete Pavements (81-HT-32) (A) O 96
Concurrent Modes
A Unified Analysis of Concurrent Modes of Flame Spread (81-HT-10) (A) O 94
Condensation
Laminar Wavy-Film Flow: Part II—Condensation and Evaporation (81-HT-14) (A) S 89
Steam Condensation on Various Gold Surfaces (81-HT-15) (A) O 94
Surface Tension Effects During Condensation on a Horizontal Tube (81-HT-26) (A) O 95
Transient Film Condensation on a Finite Horizontal Plate (81-HT-27) (A) O 95
Condensation Driven Melting
Shape Change of an Initially Vertical Wall Undergoing Condensation Driven Melting (81-HT-12) (A) S 89
Condensed Steam
The Prolific Geysers (ES) O 26
Condenser Tube Cleaning
Continuous Condenser Tube Cleaning—An Update (81-JPGC-Pwr-13) (A) N 111
Condenser Tubing
Attributes of Light Wall Copper-Nickel Condenser Tubing (81-JPGC-Pwr-10) (A) N 111
Condensers
Condenser Provisions for On-Line Detection of Tube Sheet Inleakage (80-JPGC/Pwr-23) (A) F 118
Condenser Tube-to-Tube Sheet Joint Inleakage: An Overview (81-JPGC-Pwr-6) (A) N 110
The Development of Sea-Cure Condenser Tubing (Crucible SC-1) (81-JPGC-Pwr-3) (A) N 111
Shell-and-Tube Heat Exchanger Failures in Feedwater Heaters, Condensers, and Other Heat Exchangers (81-JPGC-Pwr-1) (A) N 110
Conduction
Heat Transfer by Conduction and Radiation in One-Dimensional Planar Medium Using the Differential Approximation (81-HT-72) (A) O 98
A Method for Determining Rewetting Velocity Under Generalized Boiling Conditions (80-WA/HT-40) (A) Ap 106
Conductive Heat Transfer
Correlation Between Results of Zone Method and Experiment in Radiative Heat Transfer (81-HT-71) (A) O 98
Conductivities
Electrical Conductivity and Hall Parameter Measurements in Faraday MHD Generators (80-WA/HT-9) (A) Ap 103
Congress
Congressional Battles to Watch (WW) F 70
Fall Forecast for Congress (WW) O 82
Congressional Battles
Congressional Battles to Watch (WW) F 70
Congressional Committee
Engineering Education—A Model for Public Discussion (WW) N 98
Congressional Fellowship Program
What Will the New Year Bring? (WW) Ja 76
Congressmen
Congress and the Technical Professional (WW) Mr 86
Conical Penetrators
A Model to Estimate Forces on Conical Penetrators Into Dry Porous Rock (81-APM-15) (A) S 84
Conical Shells
Asymmetric Free Vibrations of Layered Conical Shells (81-DET-68) (A) D 90
Conical Walls
Drawing of Tubes (80-WA/APM-17) (A) Ja 100
Conjugate Surfaces
Applications of the Theory of Conjugate Surfaces in Mechanisms Design: Part 1—General Concepts (80-DET-29) (A) F 120
Connecting Rod Caps
Hot Forming Technological Advances (BTR) Jl 55
Connecting Rods
Determination of the Kinematic Characteristics of a Mechanism with a Variable Length Connecting Rod (80-DET-35) (A) F 120
Member Initial Curvature Effects on the Elastic Slider-Crank Mechanism Response (80-DET-72) (A) Mr 108
Connection Forces
Connection Force Analysis of Mechanisms Described by Explicit Equations of Motion in Generalized Coordinates (80-DET-75) (A) Mr 108
Conservation
A $16 Billion Market (ES) Ap 29
Energy Sufficiency in 2030—At What Price? (NR) My 56
Energy in Transition: A Report on Energy Policy and Future Options (CB) F 128
Expanded Socio-Technical Outlook Urged (C) Ap 55
Insulation for Conservation (NR) S 68
McGraw-Hill Encyclopedia of Energy, 2nd Ed. (CB) My 93
Support for S-T Stance (C) Mr 65
Taking a Second Look at Energy Management (NR) Je 83
Conserved Energy
Observations from Ten Years of Industrial Plant Energy Surveys (81-PID-4) (A) My 88
Conserving Petroleum
Coal-Oil Mixtures: A Near-Term Approach to Conserving Petroleum (81-Pet-22) (A) My 90
Consigny, H. Short Duration Measurements of Heat Transfer Rate to a Gas Turbine Rotor Blade (81-GT-146) (A) Jl 85
Consortium
CAD/CAM Consortium (EN) F 67
Constans, J. A. *(author)* Marine Sources of Energy (CB) D 102
Constant Pressure
Heat and Mass Transfer in a Fault-Controlled Geothermal Reservior Charged at Constant Pressure (81-HT-52) (A) O 97
Construction Management
Applied Project Management Technology Workshop (NB) Ap 80
Constructive Geometry
Constructive Geometry in Three Dimensions for Computer-Aided Design (81-DET-10) (A) N 107
Consulting Engineers
Salary Hikes Reported for Consulting Engineers (NB) D 78
Consumer Demands
Car Research Keeps Up With Consumers (NB) F 65
Contact Pressure
A Method to Measure Contact Pressure between Metallic Surfaces by Changes in Surfaces Roughness (80-WA/Prod-18) (A) My 83
Contact Ratio
The Kinematics of Crossed Helical Gears (80-DET-37) (A) F 121
Contact Stress
Singularity Consideration in Numerical Solution of Contact Stress Problems (81-Lub-53) (A) D 99
Contaminants
Detecting Contaminants by Ultraviolet Photography (BTR) Ap 58
Contaminated Lube Oil
Contamination of Centrifugal Process Gas Com-

pressor Lube Oil and Seal Oil Systems by Hydrocarbon Condensate (81-GT-182) (A) **Jl 89**

Contemporary Engineering
No Substitute for Knowledge (C) **D 56**

Contingency Planning
Contingency Planning for Liquid Pipeline Spills (81-Pet-12) (A) **My 89**

Continuing Education
CE Programs Popular at CU (EN) **My 72**

Continuous Miners
Continuous Miner Noise (80-WA/NC-4) (A) **F 123**

Continuous Plume
Mixing and Dilution of Water Soluble Hazardous Chemicals Released in Navigable Rivers (81-FE-17) (A) **S 81**

Continuous Structures
Protection of Continuous Structures Against Vibrations by Active Damping (81-DET-88) (A) **N 106**

Contouring Tool
Contour-Measuring Tool for Composite Layups (BTR) **My 50**

Contract Law
Modern Engineering Practice: Ethical, Professional, and Legal Aspects (CB) **F 128**

Contrary Screw Systems
An Extension of Screw Theory (80-DET-20) (A) **F 119**

Control Strategies
An Approach to the Preliminary Evaluation of Closed-Ecology Life Support System (CELSS) Scenarios and Control Strategies (81-ENAs-38) (A) **O 101**
Design and Control Strategies for CELSS; Integrating Mechanistic Paradigms and Biological Complexities (81-ENAs-43) (A) **O 100**
Dynamic Modeling and Experimental Simulation of Active Solar Energy Systems for the Evaluation of Control Strategies (80-WA/Sol-14) (A) **Ap 93**

Control System Design
Turbine Modeling for Power Plant Controller Design (80-WA/DSC-11) (A) **Mr 115**

Control Systems
Control System for the Mainline Gas Turbine and Crude Oil Pumps on the Saudi Arabian Petroline (81-GT-33) (A) **Je 106**
Controllability of Distributed Bilinear Systems; Recent Results and Open Problems (80-WA/DSC-27) (A) **Mr 116**
Low-Cost, Risk-Free Learning (ES) **Jl 19**

Control Valves
Aerodynamic Noise Generation in Control Valves (80-WA/NC-8) (A) **F 124**
Hydraulic Resistance Effects on Hydraulic Elevator (80-DET-112) (A) **Mr 110**

Controllers
Design of Digital Feedforward/Preview Controllers for Processes With Predetermined Feedback Controllers (80-WA/DSC-2) (A) **Mr 114**
A Versatile Microprocessor Controller for Low-Cost Helicopter Applications (81-GT-137) (A) **Jl 85**

Controversy
What's Wrong With Being Controversial? (C) **Mr 65**

Convection
An Experimental Investigation of the Convective Heat Transfer Mechanisms within a Fur Layer (80-WA/HT-28) (A) **Ap 105**
Secondary Flow Structure in Combined Free and Forced Convection in a Horizontal Isothermal Tube (81-HT-36) (A) **O 98**

Convection Dominated Flows
An Ad-Hoc Method for Convection Dominated Flows (81-FE-15) (A) **S 82**

Conversion Factors
Solar Cell Array Design Handbook: The Principles and Technology of Photovoltaic Energy Conversion (CB) **Ja 104**

Conversion Systems
A Cooperative Partnership (ES) **S 24**

Converters
Fast, Faster, and Fastest (ES) **My 18**

Converting Refuse
Waste-to-Energy Conversion—Sound, But Costly (NR) **Ja 89**

Convexly Curved Walls
Turbulent Boundary Layer Heat Transfer Experiments: A Separate Effects Study on a Convexly Curved Wall (81-HT-78) (A) **O 98**

Conveying
Continuous Vacuum Pressure Systems (80-WA/MH-2) (A) **Ap 96**

Conveyor Belt Scales
Conveyor Belt Scales and Gravimetric Weigh-feeders—An Evoluton (81-JPGC-Pwr-11) (A) **D 92**

Conveyor Systems
Conveyor Systems and Innovations (80-WA/MH-16) (A) **Ap 97**

Conveyors
Improving Conveyor Performance (IF) **S 58**

Cook, J. L. A Rational Approach to Cold Spring of High-Temperature Piping Systems (81-PVP-42) (A) **Ag 82**

Cook, M. F. A Mathematical Basis for the Random Decrement Vibration Signature Analysis Technique (81-DET-13) (A) **N 104**

Cook, N. H. Elections to Fellow Grade **Ag 74**

Cook, R. S. Heat Pipe Avionic Thermal Control Systems (80-ENAs-4) (A) **Mr 111**

Coolant Flowing
Forced Flow Cooling of a Volumetrically Heated Porous Layer (81-HT-48) (A) **O 97**

Coolant Injection
Analysis for Predicting Adiabatic Wall Temperatures with Single Hole Coolant Injection into a Low Speed Crossflow (81-GT-91) (A) **Je 111**

Coolant Systems
HTGR-GT Primary Coolant Transient Resulting from Postulated Turbine Deblading (81-GT-19) (A) **Je 105**

Cooldown
Heat Exchanger Applications During TMI-2 Post-Accident Cooldown (81-JPGC-NE-9) (A) **N 110**

Cooled Turbine Blades
Effect of Temperature Dependent Mechanical Properties on Thermal Stress in Cooled Turbine Blades (81-GT-105) (A) **Je 112**

Cooley, D. B. Fatigue Analysis of Railroad Freight Car Truck Bolster (80-WA/RT-6) (A) **F 126**

Cooling
Cooling Air Flow Characteristics in Gas Turbine Components (81-GT-76) (A) **Je 110**
The International Energy Agency's Program to Develop a Portable Meteorological Instrument Package for Solar Energy Applications (80-WA/Sol-27) (A) **Ap 95**
Rockbeds for Comfort Cooling: An Assessment in Several U.S. Cities (80-WA/Sol-8) (A) **Ap 93**
Solar Brayton Cycle for Heating and Cooling (80-WA/Sol-33) (A) **Ap 95**
Studies of Full-Coverage Film Cooling Part 1: Cooling Effectiveness of Thermally Conductive Wall (81-GT-37) (A) **Je 107**; Part 2: Measurement of Local Heat Transfer Coefficient (81-GT-38) (A) **Je 106**

Cooling Systems
Analysis and Design of Hybrid Double-Absorption Cooling Systems for Low Grade Thermal Energy Applications (80-WA/HT-44) (A) **Ap 106**
Closed-Cycle Evaporative Cooling Systems: Their Off-Design Performance **D 40**
Design Challenges of High Performance Aircraft POD EOCM Cooling Systems (81-ENAs-6) (A) **O 100**
Direct Reactor Auxiliary Cooling System for the 1000-MWe LMFBR Developmental Plant (81-JPGC-NE-7) (A) **N 109**
Frictionless Devices Under Development (BTR) **Ap 57**
Shuttle Orbiter Ammonia Boiler Subsystem (81-ENAs-44) (A) **O 101**
Solar Assisted Desiccant Dehumidification and Cooling with an Indirect Evaporative Cooler (80-WA/Sol-29) (A) **Ap 94**

Cooling Towers
Preliminary Design of Dry Cooling Tower for the Closed Cycle Gas Turbine HTGR (81-GT-20) (A) **Je 105**
System Analysis Approach to Energy Conservation in Cooling Tower—Central Chiller Plant Systems (80-ENAs-3) (A) **Mr 111**
Unique Cooling Tower (IF) **D 64**

Coombs, M. A Solar Receiver For a 25-kW(e) Gas Turbine **Ja 26**

Co-op Program
The Co-op Program at Berkeley: Everyone Benefits (EN) **S 74**

Cooper, G. P. Editor, Retiring (C) **N 73**

Cooper, L. Y. An Experimental Study of Upper Hot Layer Stratification in Full-Scale Multiroom Fire Senarios (81-HT-9) (A) **S 88**; Heat Transfer from a Buoyant Plume to an Unconfined Ceiling (81-HT-7) (A) **S 89**

Cooperrider, N. K. Railway Freight Car Field Tests (80-WA/DSC-7) (A) **Mr 115**

Coates, L. Contamination of Centrifugal Process Gas Compressor Lube Oil and Seal Oil Systems by Hydrocarbon Condensate (81-GT-182) (A) **Jl 89**

Co-Planar Linkage Systems
The Application of Finite Element Methods to the Dynamic Analysis of Flexible Spatial and Co-Planar Linkage Systems (80-DET-87) (A) **Mr 108**

Copper
Gold Mining in New Guinea (BTR) **N 76**

Copper Condenser Tube Alloys
The Effect of Ammonia and Oxygen Levels on the Corrosion Characteristics and Copper Release Rates of Copper Base Condenser Tube Alloys Under Simulated Steam-Side Conditions (81-JPGC-Pwr-9) (A) **N 111**

Corcos, G. M. Visualization of the Flow Structure at the Free Interface of Two Counter-Flowing Streams (80-WA/FE-11) (A) **My 86**

Core Cooling Functions
HTGR-GT and Electrical Load Integrated Control (80-WA/DSC-25) (A) **Mr 116**

Core Management Methods
FETF Core Component Duct Lifetime: Criteria and Core Management Methods (81-PVP-23) (A) **Ag 80**

Core Problem
Resolution of a Core Problem in Wound Rolls (80-WA/APM-23) (A) **Ja 102**

Coring System
Long Coring Facility Winch and Cable System (80-WA/OCE-9) (A) **Ap 98**

Coriolis Force
Correction for Streamline Curvature and Coriolis Force in a Boundary Layer Integral Method (81-GT-97) (A) **Je 111**
Flow Prediction in Rotating Ducts Using Coriolis-Modified Turbulence Models (80-WA/FE-1) (A) **My 85**

Cornelius, D. K. Numerical Computation of Swirling Gas-Particle Flows: Application to Pulverized Coal Classifiers (80-WA/HT-31) (A) **Ap 105**

Corner-Fired Boilers
Recent Pilot-Scale Development of a Low-NO_x, "Air-on-Wall" Corner-Fired Combustion System (81-JPGC-APC-4) (A) **D 100**

Corporate Value System
The Importance of a Corporate Value System **N 89**

Corrective Heat Flux
Simulation of the Transport Time Delay in Fluid Loops by Means of a Corrective Heat Flux (80-ENAs-22) (A) **Mr 112**

Correlation Concept
Synthesis of Four-Bar Mechanism with Correlation Concept (80-DET-81) (A) **Mr 108**

Corresponding States Correlation
Corresponding States Correlation for the Spinodal and Homogeneous Nucleation Pressures (81-HT-19) (A) **O 94**

Corrosion
Attributes of Light Wall Copper-Nickel Condenser Tubing (81-JPGC-Pwr-10) (A) **N 111**
Corrosion Experiences in Large Steam Turbines (81-JPGC-Pwr-32) (A) **N 113**
The Effect of Ammonia and Oxygen Levels on the Corrosion Characteristics and Copper Release Rates of Copper Base Condenser Tube Alloys Under Simulated Steam-Side Conditions (81-JPGC-Pwr-9) (A) **N 111**
Flame Imprinted Characteristics of Ash Relevant to Boiler Slagging, Corrosion and Erosion (81-JPGC-Fu-1) (A) **D 93**
Gas Turbine Vanadium Inhibition (81-GT-187) (A) **Jl 88**
High Effectiveness Recuperator for Waste Heat Recovery Applications (80-WA/HT-15) (A) **Ap 104**
Hot Dip for a Silent Killer (BTR) **O 61**
An Investigation of the Relationship Between Partial Pressure of SO_3 and the Corrosion Potential of In 738 in Na_2SO_4 Melts at 900°C (80-WA/CD-3) (A) **Ja 97**

Stress Corrosion Cracking of Low Pressure Turbine Discs—An Industry Survey (81-JPGC-Pwr-30) (A) D 92

Corrosion Cracking

Field Testing and Laboratory Evaluation of Corrosion Cracking of Rotor Steels (81-JPGC-Pwr-29) (A) N 113

Qualification of Induction Heating Stress Improvement for Mitigation of Stress Corrosion Cracking (81-PVP-13) (A) Ag 79

Corrosion and Deposits

An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) (A) Ja 97

Erosion-Corrosion in the Multisolids Fluidized Bed Combustor, Part II: Burning Coal With Limestone in a 14 × 25-In. Unit with Integral Boiler (80-WA/CD-4) (A) Ja 97

An Investigation of the Relationship Between Partial Pressure of SO_3 and the Corrosion Potential of In 738 in Na_2SO_4 Melts at 900° C (80-WA/CD-3) (A) Ja 97

Superplants for Power Generation: A Way to Improve Coal Utilization (80-WA/CD-2) (A) Ja 97

Corrosion-Erosion Test Rig

A Corrosion-Erosion Test Rig for High-Temperature Turbine Materials Evaluation (81-GT-198) (A) JI 89

Corrugated Walls

Some Anomalies in the Boundary Layer and Friction Drag Characteristics of Streamwise Corrugated Walls at Transonic and Supersonic Freestream Velocities (81-FE-37) (A) S 83

Cosine Law

. . . Sunlight . . . (C) Ag 42

Cospectrum Matrix

A Test for Time Dependence of Multivariate Linear Systems (80-WA/DSC-30) (A) Mr 116

Cossuol, J. M. An Investigation of Small Break Loss-of-Coolant Phenomena in a Small Scale Non-nuclear Test Facility (80-WA/NE-2) (A) Ja 96

Cost Calculation Method

Engine Maintenance Cost Calculation Method (81-GT-34) (A) Je 107

Costello, G. A. Axial Response of Oval Wire Ropes (80-WA/OCE-3) (A) Ap 97

Cotterell, B. The Split Nut: An Easy to Fit Nut with a Higher Inherent Strength (80-WA/DE-6) (A) Ap 98

Cotton, K. C. Determining Turbine Throttle Flow from Measured First Stage Shell Pressure—A Critical Assessment (81-JPGC-Pwr-17) (A) N 112; A Simplified ASME Acceptance Test Procedure for Steam Turbines (80-JPGC/Pwr-15) (A) F 117

Cotton Fibers

Sampling for Confidence Interval Estimation of the Fiber Shape Factor (80-Tex-5) (A) F 122

Cotton Woven Fabrics

An Analytical Approach to the Effect of Laundering Processes on the Drape and Stiffness Properties of Cotton Woven Fabrics (80-Tex-1) (A) F 122

Coulomb Friction

A New Solution to Coulomb Friction in Mechanism Bearings: Theory and Application (80-DET-52) (A) Mr 106

Counterflow

The Asymptotic Structure of Counterflow Premixed Flame for Large Activation Energies (81-HT-22) (A) O 94

Counter-Flowing Streams

Visualization of the Flow Structure at the Free Interface of Two Counter-Flowing Streams (80-WA/FE-11) (A) My 86

Coupled Blade-Disc Resonance

On the Formulation of Coupled/Uncoupled Dynamics Analysis of Blade-Disc Assemblies (81-DET-126) (A) D 91

Coupler Curves

Complex Number Synthesis of Four-Bar Path Generating Mechanisms Adjustable for Multiple Tangential Circular Arcs (80-DET-77) (A) Mr 108

Coupler-Line Envelopes

A Classification of Coupler-Line Envelopes From Hinged Four-Bar Linkages (80-DET-42) (A) F 121

Courtney, C. W. Bench Scale Testing of Low-NO_x LBG Combustors (81-GT-59) (A) Je 109

Couts, W. H., Jr. Strengthening Mechanisms and Process Controls for Super Waspaloy (81-GT-175) (A) JI 88

Cox, C. H., II Design of Solar Cells for Use in Photovoltaic/Thermal Collectors (80-WA/Sol-37) (A) Ap 95

Cox, G. B., Jr. Pattern Factor Improvement in the F-100 Primary Combustion System (81-GT-25) (A) Je 105

Cox, J. C. Brine Channel Enlargement in Sea Ice During Spring Thaw (80-WA/HT-18) (A) Ap 104

Cox, J. E. Elections to Fellow Grade O 92

Coy, J. Optimal Tooth Numbers for Compact Standard Spur Gear Sets (81-DET-115) (A) D 92

Coy, J. J. A Method of Selecting Grid Size to Account for Hertz Deformation in Finite Element Analysis of Spur Gears (81-DET-116) (A) N 107; Surface Geometry of Circular Cut Spiral Bevel Gears (81-DET-114) (A) D 92

Crabb, D. A Round Jet Normal to a Cross-Flow (80-WA/FE-10) (A) My 86

Crabtree, R. E. The Cabin Air Conditioning and Temperature Control System for the Boeing 767 and 757 Airplanes (80-ENAs-5) (A) Mr 110

Crack Curving

Approximate Description of Crack Kinking and Curving (81-APM-22) (A) S 85

Crack Growth

J-Integral Estimation Procedures (81-PVP-10) (A) Ag 79

Presentation of Failure Analysis Data by the Fatigue Fracture Mechanics Diagram (81-PVP-11) (A) Ag 80

A Unified Model for Rolling Contact Life Prediction (81-Lub-42) (A) D 99

Crack Initiation

A Dislocation Model for Fatigue Crack Initiation (81-APM-3) (A) S 83

Dynamic Crack Propagation Analysis of the SEN Specimen by a Numerical Method (80-WA/PVP-2) (A) Ja 97

A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part II: Experimental Verification on a Type 304 Stainless Steel Pipe (80-WA/PVP-4) (A) Ja 98

Crack Kinking

Approximate Description of Crack Kinking and Curving (81-APM-22) (A) S 85

Crack Propagation

An Analysis of, and Some Observations on, Dynamic Fracture in an Impact Test Specimen (81-PVP-18) (A) Ag 80

Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (80-WA/PVP-6) (A) Ja 98

Cracked Pipes

A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part I: J-Integral Analysis (80-WA/PVP-3) (A) Ja 98

Cracking

3-D Finite Element Analysis for the Investigation of Feedwater Line Cracking in PWR Steam Generators (81-PVP-3) (A) Ag 78

Flow Model Test for the Investigation of Feedwater Line Cracking for PWR Steam Generators (81-PVP-4) (A) Ag 79

Stress Corrosion Cracking of Low Pressure Turbine Discs—An Industry Survey (81-JPGC-Pwr-30) (A) D 92

Cracks

On Branched, Interface Cracks (81-APM-20) (A) S 84

Dynamic Fracture Initiation in Metals and Preliminary Results on the Method of Caustics for Crack Propagation Measurements (81-PVP-15) (A) Ag 80

Early Detection of Cross-Sectional Rotor Cracks by Turbine Shaft Vibration Monitoring Techniques (81-JPGC-Pwr-26) (A) N 112

Inclusions and Service Induced Cracks in a Mature Population of Gas Turbine Engine Bearings (81-Lub-48) (A) D 99

Procedures for Estimating the Probability of Steam Turbine Disc Rupture from Stress Corrosion Cracking (81-JPGC-Pwr-31) (A) D 92

Residual Stress Redistribution Caused by Notches and Cracks in a Partially Autofrettaged Tube (81-PVP-6) (A) Ag 79

Transition From Brittle to Ductile Fracture for a Rapidly Propagating Crack (81-PVP-16) (A) Ag 80

Transverse Vibrations of a General Cracked-Rotor Bearing System (81-DET-45) (A) D 89

Crafa, V. J. Engine Cycle Selection for Advanced Technology Engine Studies (81-GT-191) (A) JI 89

Craig, J. J. Hybrid Position/Force Control of Manipulators (80-WA/DSC-23) (A) Mr 115

Cranes

The Crane Truth (C) My 42

Crankshafts

Spatial Finite Line Element Method for Determining Critical Speeds of Multi-Throw Crankshafts Considering Actual Throw Geometry (81-DET-141) (A) D 91

A Vibration Source in Refigerant Compressors (81-DET-72) (A) O 104

Crawford, L. W. On Heat Balance in Coal-Fired MHD Systems, Channel Heat Transfer and Electrode Temperature Distribution (80-WA/HT-11) (A) Ap 103

Crawling Aid

Device Helps Brain-Injured Children to Crawl (BTR) D 63

Creative Problem-Solving

Technological Innovation in Education and Industry (CB) F 128

Credibility

Zwiep Lauded (C) F 47

Zwiep's Important Message (C) Ap 54

Credit Cards

Computerized Credit Cards (NB) F 65

Creep

Boussinesq-Papkovich Functions for Creep Around a Spherical Cavity or a Rigid Inclusion in a Gravity-Loaded Half Space (81-APM-30) (A) S 85

Creep and Creep Recovery of 304 Stainless Steel Under Combined Stress With a Representation by a Viscous-Viscoelastic Model (80-WA/APM-10) (A) Ja 100

Creep Behavior

A Study on Creep Behavior Evaluation for Welded Joint in High Temperature Structure Design (81-PVP-36) (A) Ag 82

Creep Relaxation

Optimum Design and Creep Relaxation of Dissimilar-Material Multilayer Shrink Fitted Vessels (81-PVP-30) (A) Ag 81

Creeping Flows

Droplet Dynamics in Creeping Flows (81-APM-29) (A) S 85

Cremers, C. J. Frost Formation on Vertical Cylinders in Free Convection (80-WA/HT-22) (A) Ap 104

Critical Flow

Calculation of the Theoretical Critical Flow Rate of Saturated Steam (80-WA/PTC-3) (A) Ap 101

Critical Heat Flux

Critical Heat Flux in the Channels of a Closed-Loop Water-Cooled Turbine (81-HT-74) (A) O 98

Critical Materials

Critical Materials—A New Dimension (81-GT-61) (A) Je 109

Critical Speeds

A Note on Critical-Speed Solutions for Finite-Element-Based Rotor Models (81-DET-50) (A) N 105

Passage of a Rotor Through a Critical Speed (81-DET-58) (A) N 105

Spatial Finite Line Element Method for Determining Critical Speeds of Multi-Throw Crankshafts Considering Actual Throw Geometry (81-DET-141) (A) D 91

Crop Dryers

Solar Energy Crop Dryers (IF) S 59

Cross, F. L., Jr. Characterization of Dust and Emissions from a Taconite Bulk Handling Facility (80-WA/APC-2) (A) Ap 102

Cross-Cooling

Performance of Cross-Cooled Desiccant Dehumidifiers (80-WA/Sol-34) (A) Ap 95

Cross Section Shapes

Optimal Shape Design of Turbine Blades (81-DET-128) (A) N 106

Cross Stream

Measurements in a Pipe Flow Issuing Perpendicularly into a Cross Stream (80-WA/HT-24) (A) Ap 104

Crossflow

Analysis and Asymptotic Solutions Compressible Turbulent Corner Flow (81-GT-149) (A) JI 88

An Experimental Investigation of Merging Buoyant Jets in a Crossflow (80-WA/HT-23) (A) **Ap 105**
Instability Mechanisms and Stability Criteria of a Group of Circular Cylinders Subjected to Cross-Flow—Part I: Theory (81-DET-21) (A) **N 104; Part II: Numerical Results and Discussions (81-DET-22) (A) N 105**
The Prediction of the Flow and Heat Transfer in the Vicinity of a Jet in Crossflow (80-WA/HT-26) (A) **Ap 105**
Reynolds Number and Ambient Turbulence Effects on the Nearfield Mean Characteristics of a Laboratory Model Thermal Plume (81-FE-7) (A) **S 81**
A Round Jet Normal to a Cross-Flow (80-WA/FE-10) (A) **My 86**
Streamwise Flow and Heat Transfer Distributions for Jet Array Impingement with Crossflow (81-GT-77) (A) **Je 110**

Crossover Pressure Control
Retrofitting Utility Power Plants for Cogeneration Using Crossover Pressure Control (81-JPGC-Pwr-33) (A) **D 93**

Crosswind Gusts
Modeling and Dynamic Response of Maglev Vehicles Subjected to Crosswind Gusts (80-WA/DSC-8) (A) **Mr 115**

Crude Oil
Evaluation of the Impact on CGT Operation when Converting to Crude Oil Fuel (81-GT-207) (A) **Jl 89**
Octane-Booster Optimism (ES) **Ap 29**
Oil Recovery in the Arctic (ES) **F 23**

Crude Oil Pumps
Control System for the Mainline Gas Turbine and Crude Oil Pumps on the Saudi Arabian Petroline (81-GT-33) (A) **Je 106**

Cruise Engine Configurations
Establishing Cruise-Engine Cycle Payoffs for a Supersonic VSTOL Aircraft (81-GT-100) (A) **Je 112**

Cruise Missiles
A Family of Small, Low Cost Turbojet Engines for Short Life Applications (81-GT-205) (A) **Jl 90**
Ice Protection of Engine Air Inlet for Cruise Missile Applications (80-ENAs-2) (A) **Mr 111**

Crushed Slag
Roadbeds from Wast Ashes (IF) **O 65**

Cruzen, S. Carbon/Carbon Components for Advanced Gas Turbine Engines (81-GT-35) (A) **Je 107**

Cryogenic Technology
Small Helium Liquefier (IF) **D 64**

Cryogenics
Cryogenic Engineering (NB) **Ap 80**

Crystals
An Optoelectronic Chip (BTR) **D 59**
Thermal Design of Fluid Test Cell for Growth of Crystals in Space (80-ENAs-13) (A) **Mr 111**

Cubic of Stationary Curvature
New Complex-Number Form of the Cubic of Stationary Curvature in a Computer-Oriented Treatment of Planar Path-Curvature Theory for Higher-Pair Rolling Contact (80-DET-90) (A) **Mr 109**

Cumpsty, N. A. A Simple Method for Compressor Stall Cell Propagation (81-GT-73) (A) **Je 110**

Cunningham, J. M. Passive Thermal Control of the ASALM-PTV Ejectable Nozzle (80-ENAs-8) (A) **Mr 111**

Curran, R. M. Corrosion Experiences in Large Steam Turbines (81-JPGC-Pwr-32) (A) **N 113**; Elections to Fellow Grade **Je 101**

Curry, C. E. Engine Maintenance Cost Calculation Method (81-GT-34) (A) **Je 107**

Curvature
New Complex-Number Forms of the Euler-Savary Equation in a Computer-Oriented Treatment of Planar Path-Curvature Theory of Higher-Pair Rolling Contact (80-DET-89) (A) **Mr 109**
Numerical Scheme for Determining the Pressure Angle and Radius of Curvature of Cams (80-DET-70) (A) **Mr 107**

Curvature Effects
Member Initial Curvature Effects on the Elastic Slider-Crank Mechanism Response (80-DET-72) (A) **Mr 108**

Curvature Restrictions
Two-Dimensional Turbulent Offset Jet-Boundary Interaction (80-WA/FE-12) (A) **My 85**

Curvature Theory
The Curvature Theory of Line Trajectories in Spatial Kinematics (80-DET-18) (A) **F 119**

Curved Tubes
Heat Transfer of Fully Developed Flow in Curved Tubes (81-HT-39) (A) **O 96**

Curving Mechanics
Stability and Curving Mechanics of Rail Vehicles (80-WA/DSC-15) (A) **Mr 115**

Cusano, C. Analysis of Externally Pressurized, Double-Pad, Gas Porous Thrust Bearing (81-Lub-25) (A) **D 98**; The Effects of Artificially-Produced Defects on the Film Thickness Distribution in Sliding EHD Point Contacts (81-Lub-46) (A) **D 98**

Cusick, R. J. Development of an Advanced Sabatier CO_2 Reduction Subsystem (81-ENAs-11) (A) **S 86**

Custom Design Systems
LM2500 Gas Turbines for Mobil Statfjord B Platform—the North Sea (81-GT-172) (A) **Jl 87**

Cutrone, M. B. Evaluation of Advanced Combustors for Dry No_x Suppression with Nitrogen Bearing Fuels in Utility and Industrial Gas Turbines (81-GT-125) (A) **Je 113**

Cutting
Explicit Identification of Machine Tool Structure and Cutting Process Using Bivariate Time Series Models (80-WA/Prod-27) (A) **My 84**

Cutting Conditions
Special Aspects of Chatter in Milling (81-DET-18) (A) **D 89**

Cutting Force
Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part I: Plain Milling with a Single-Toothed Helical Cutter (80-WA/Prod-4) (A) **My 82**; Part 2: Plain Milling with a Multitoothed Helical Cutter (80-WA/Prod-5) (A) **My 82**

Cutting Units
Ultrasonic Machining System (IF) **Jl 60**

Cycle Elimination Process
Evaluation of Dynamic Load Combination Fatigue Damage (81-PVP-20) (A) **Ag 80**

Cycle Parameters
Engine Cycle Selection for Advanced Technology Engine Studies (81-GT-191) (A) **Jl 89**

Cyclic Loading
Cyclic Behavior of Class U Wheel Steel (80-WA/RT-9) (A) **F 126**
The Rate (Time)-Dependent Behavior of Ti-7 Al-2 Cb-1 Ta Titanium Alloy at Room Temperature Under Quasi-Static Monotonic and Cyclic Loading (81-APM-7) (A) **S 84**

Cyclic Thermal Loads
Quick-Response Heat Pipe (IF) **Jl 61**

Cyclic Thermal Stresses
Analysis of Cyclic Thermal and Residual Stresses in CH36 Wheels Under Series of Severe Drag Braking (81-RT-10) (A) **Ag 78**

Cyclone Boilers
The Effects of a Volatile Fireside Manganese Additive on Coal-Fired Utility Boiler Operation (80-JPGC/Fu-4) (A) **Ja 98**

Cylinders
Effect of Surface Roughness on Elastohydrodynamic Line Contact (81-Lub-23) (A) **D 98**
The Effects of Friction Between Cylinders and Rubber Staves of Finite Thickness (81-Lub-30) (A) **D 98**
Experimental Free Convection from an Inclined Cylinder (80-WA/HT-29) (A) **Ap 105**
An Experimental Investigation of the Convective Heat Transfer Mechanisms within a Fur Layer (80-WA/HT-28) (A) **Ap 105**
Experimental Studies of Damping and Hydrodynamic Mass of a Cylinder in Confined Two-Phase Flow (81-DET-27) (A) **D 89**
Kinematic Correction for Roller Skewing (80-DET-76) (A) **Mr 108**
Lubrication of a Cylinder on a Plane With a Non-Newtonian Fluid Considering Cavitation (81-Lub-2) (A) **D 95**

Cylindrical Bearings
Effect of Surface Ellipticity on Dynamically Loaded Cylindrical Bearings (81-Lub-1) (A) **D 96**

Cylindrical Billets
Axisymmetric Upset Forging: A Semi-Empirical Approach (80-WA/Prod-21) (A) **My 83**

Cylindrical Pipe Wall
Sound Transmission Through a Cylindrical Pipe Wall (80-WA/NC-3) (A) **F 123**

Cylindrical Roller Bearings
Flange Loads Measurements in a Cylindrical Roller Bearing (81-Lub-18) (A) **D 97**

Cylindrical Shells
Delamination of Layered Cylindrical Shells Under Internal Pressure (80-WA/PVP-7) (A) **Ja 98**
Nonlinear Response of an Elastic Cylindrical Shell to a Transient Acoustic Wave (81-APM-10) (A) **S 84**
Point Admittance of Cylindrical Shells With and Without Ring-Stiffening (80-WA/NC-5) (A) **F 124**
Vibrations of Cylindrical Shells With Time-Dependent Boundary Conditions (81-PVP-21) (A) **Ag 80**

Cyrus, J. D. Establishing Cruise-Engine Cycle Payoffs for a Supersonic VSTOL Aircraft (81-GT-100) (A) **Je 112**

D

Dadras, P. Axisymmetric Upset Forging: A Semi-Empirical Approach (80-WA/Prod-21) (A) **My 83**; Upper Bound Analysis of Axisymmetric, Closed-Die Forgings (80-WA/Prod-1) (A) **My 84**

Dallman, J. C. De-Entrainment on Vertical Elements in Air Droplet Cross Flow (80-WA/HT-46) (A) **Ap 106**

Dam, A. S. Heat Exchanger Applications During TMI-2 Post-Accident Cooldown (81-JPGC-NE-9) (A) **N 110**

Damped Linear Systems
Some Results on the Nature of Eigenvalues of Discrete Damped Linear Systems (80-WA/APM-19) (A) **Ja 101**

Damped Systems
Optimal Design of Linear and Nonlinear Vibration Absorbers for Damped Systems (81-DET-83) (A) **N 105**

Damped Torsional Systems
Eigenvalue Derivations for Damped Torsional Vibrations (81-DET-53) (A) **N 105**

Damping
Comparison of Equivalent Viscous Damping and Nonlinear Damping in Discrete and Continuous Vibrating Systems (81-DET-89) (A) **D 90**
The Damping of Structural Vibration by Controlled Interfacial Slip in Joints (81-DET-86) (A) **N 106**
Determination of Damping Values for Turbine Blades (81-DET-131) (A) **N 108**
Experimental Studies of Damping and Hydrodynamic Mass of a Cylinder in Confined Two-Phase Flow (81-DET-27) (A) **D 89**
Finite Journal Bearing with Nonlinear Stiffness and Damping. Part 1: Improved Mathematical Models (81-DET-51) (A) **D 89**; Part 2: Stability Analysis (81-DET-52) (A) **N 105**
Modal Analysis of Non-Proportionally Damped Mechanical Structures (81-DET-75) (A) **O 105**
Structural Damping by Slip in Joints (81-DET-139) (A) **D 92**
Synthesis of Two-Degree-of-Freedom Mechanism with Pulse Loading (80-DET-82) (A) **Mr 108**

Dandage, S. Empirical Design Procedure for the Thermohydrodynamic Behavior of Journal Bearings (81-Lub-19) (A) **D 97**

Danis, L. Carbon/Carbon Components for Advanced Gas Turbine Engines (81-GT-35) (A) **Je 107**

Dant, C. C. NASA-AMES Life Sciences Flight Experiments Program—1980 Status Report (80-ENAs-34) (A) **Mr 113**

Danyluk, P. R. Emission Reduction by Combustion Modification in Two Stroke Spark Ignited Gas Engines and by Catalytic Conversion (81-DGP-7) (A) **My 87**

Dareing, D. W. Drilling and Completing Multiple Branched Boreholes for In Situ Leach Mining (81-Pet-2) (A) **My 88**; Mud Pulse Tachometer for Downhole Drilling Motors (81-Pet-3) (A) **My 88**

Dargie, P. P. MAPS-1: Computer-Aided Design System for Preliminary Material and Manufacturing Process Selection (80-DET-51) (A) **Mr 108**

Darkazalli, G. The Parallel Heat Pump and Photovoltaic Heating and Cooling—Phase II (80-WA/Sol-40) (A) **Ap 95**

Darlow, M. S. Application of the Principle of Reciprocity to Flexible Rotor Balancing (81-DET-49) (A) **N 105**; Real-Time Vibration Rate Acquisition and Signal Processing Using a Low-Cost Microcomputer (81-DET-28) (A) **O 103**

Darrieus Turbine
Torque Ripple in a Darrieus, Vertical Axis Wind Turbine (80-WA/Sol-13) (A) **Ap 93**

Das Vikal, R. C. Vibration Analysis of a Flexible System Mounted on a Viscoelastic Sandwich Beam (81-DET-64) (A) **N 106**

Dashboards
Dashboard CRT's? (NB) **Ji 79**

Data Acquisition System
Gas Turbine Data Acquistion Using a Microcomputer (81-GT-83) (A) **Je 110**

Data Bank
Nuclear Equipment Data Bank (ES) **Ja 20**

Data Base
Alcohol Fuels Data Base Needs Input (BTR) **Ap 61**

Data Loggers
Windmill Farm (ES) **Ap 28**

Datseris, P. Principles of a Heuristic Optimization Technique as an Aid In Design—An Overview (80-DET-44) (A) **F 121**

Davall, P. W. A Test for Time Dependence of Multivariate Linear Systems (80-WA/DSC-30) (A) **Mr 116**

David, J. W. Assessment of Bit Life Under Conditions of Rotary-Vibratory Drilling (81-Pet-15) (A) **My 89**

Davidson, D. H. Drilling and Completing Multiple Branched Boreholes for In Situ Leach Mining (81-Pet-2) (A) **My 88**

Davidson, L. N. Considerations in Evaluating Wet and Dry FGD Systems (81-JPGC-Pwr-5) (A) **N 110**

Davion, R. Turbulence Characteristics in the Annulus-Wall Boundary Layer and Wake Mixing Region of a Compressor Rotor Exit (81-GT-148) (A) **Ji 85**

Davis, J. P. Slow-Speed Two-Stroke Diesel Engine Tests Using Coal-Based Fuels (81-DGP-12) (A) **My 88**

Davis, K. H. Expanded Socio-Technical Outlook Urged (C) **Ap 55**

Davis, L. R. An Experimental Investigation of Merging Buoyant Jets in a Crossflow (80-WA/HT-23) (A) **Ap 105**

Davis, S. H., Jr. The Factors Influencing the Formation of Li_2CO_3 from LiOH and CO_2 (80-ENAs-45) (A) **Mr 114**

Davy, W. C. Galileo Probe Forebody Entry Thermal Protection: Aerothermal Environments and Heat Shielding Requirements (80-ENAs-24) (A) **Mr 112**

Day, E. Diesel Engine Governing with Load Feedback (81-DGP-5) (A) **My 88**

de Abreu, R. C. An Integral Equation Approach to Radiative Heat Transfer Between Heat Conducting Solids of Arbitrary Shape (81-HT-73) (A) **O 98**

Dean, B. V. (*editor*) Management of Research and Innovation (Studies in the Management Sciences) (CB) **S 90**

Dear, T. A. Introduction to Design Specification Criteria for Acoustical Insulation (80-WA/NC-10) (A) **F 124**

DeBell, G. C. Development and Testing of a Ceramic Turbocharger Rotor (81-GT-195) (A) **Ji 89**

Deblon, B. Experience with Large Heavy-Duty Gas Turbine Rotors (81-GT-181) (A) **Ji 88**

Debris Monitoring
Full-Flow Debris Monitoring in Gas Turbine Engines (81-GT-60) (A) **Je 109**

de Buhr, A. P. "Super Series" Wheel Creep Control System (80-WA/RT-3) (A) **F 125**

Decay
Theoretical Investigation of the Decay of Scalar Variance Injected into Homogeneous Turbulence (81-FE-31) (A) **S 83**

Deck Handling System
The Motion Compensation Deck Handling System for the Remote Unmanned Work Systems (80-WA/OCE-11) (A) **Ap 97**

Deconinck, H. Finite Element Methods for Transonic Blade-to-Blade Calculation in Turbomachines (81-GT-5) (A) **Je 104**

Decontamination
Metal Decontamination Process (BTR) **My 49**

DeCorpo, J. J. Atmospheric Monitoring in Submersibles (80-ENAs-31) (A) **Mr 113**

Decorso, S. M. ANSI B133.7 Survey of Gas Turbine Synthetic Liquid Fuels (81-JPGC-GT-8) (A) **D 95**

Decoupling
An Adaptive Control Scheme for Mechanical Manipulators—Compensation of Nonlinearity and Decoupling Control (80-WA/DSC-6) (A) **Mr 114**

DeCrescente, M. A. Deposition—Hot Corrosion in Gas Turbine Engines (81-GT-153) (A) **Ji 86**

Deddens, J. C. The Future of Nuclear Power in the U.S. **F 26**

De-Entrainment
De-Entrainment on Vertical Elements in Air Droplet Cross Flow (80-WA/HT-46) (A) **Ap 106**

Deep Drawing Test
A Deep Drawing Test for Determining the Punch Coefficient of Friction (80-WA/Prod-10) (A) **My 82**

Deep Ocean Systems
Performance Evaluation of Buoy Shapes for Deep Ocean Systems (80-WA/OCE-12) (A) **Ap 97**

Deep Ocean Water
Heat Must Go Somewhere (C) **F 46**

Deep Seabed Mining
Petroleum and Hard Minerals from the Sea (CB) **N 115**

Deep Submersibles
Steel for Deep Submersibles (IF) **Je 73**

Deep-Water Drilling
Deep Water Technology is Available—Only Opportunity is Lacking (NR) **Ag 57**

Deep Water Systems
Design and Operating Aspects of Campbell Plant Circulating Water System (80-JPGC/Pwr-17) (A) **F 117**

Deevy, W. J. Editor, Retiring (C) **N 73**

Defective Engineering
Reinventing the Wheel: The Failure to Utilize Existing Technology **Mr 54**

Defective Ladder
Simple Engineering Homework Negates Defect in Ladder Accident Case (80-WA/DE-12) (A) **Ap 101**

Defects
Effect of Inter-Modulation and Quasi-Periodic Instability in the Diagnosis of Rolling Element Incipient Defect (81-DET-11) (A) **N 104**

Deflection Variables
A Note on Critical-Speed Solutions for Finite-Element-Based Rotor Models (81-DET-50) (A) **N 105**

Defense
Shortage of Engineers Said to Affect Defense (EN) **Ap 82**

Defense Planning
'HEL' in Outer Space (BTR) **Ji 49**

Deflection
The Role of Wheel-Work Deflection in Grinding Operations (80-WA/Prod-11) (A) **My 82**

Deformation
Simplified Solution for Stresses and Deformations (81-Lub-54) (A) **D 100**

DeGeorge, C. L. Mechanical, Thermal and Hydraulic Design of a Monometallic Water-Cooled Gas Turbine Nozzle (81-HT-77) (A) **O 99**; Water-Cooled Gas Turbine Monometallic Nozzle Fabrication and Testing (81-GT-162) (A) **Ji 87**

Degradation
Thin-Film Solar Cells (NB) **My 67**

Degree-of-Freedom Motions
Instantaneous Kinematics of Multiple-Degree-of-Freedom Motions (80-DET-53) (A) **Mr 106**

Dehumidification
Solar Assisted Desiccant Dehumidification and Cooling with an Indirect Evaporative Cooler (80-WA/Sol-29) (A) **Ap 94**

Dehumidifiers
Performance of Cross-Cooled Desiccant Dehumidifiers (80-WA/Sol-34) (A) **Ap 95**

de Krasinski, J. A Study of Separated Flow Patterns in Front of Buildings and Bodies Facing the Wind with Their Sharp Edge (81-FE-14) (A) **S 81**

Delamination
Delamination of Layered Cylindrical Shells Under Internal Pressure (80-WA/PVP-7) (A) **Ja 98**

Deliberate Surplus
Education Issues (C) **Ap 54**

DeLong, J. F. Evaluation of INCOCLAD 671/800 H Tubing After Nine Years of Reheater Service in a Coal-Fired Utility Boiler (80-WA-/Fu-6) (A) **F 127**

Delph, T. J. Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plane Strain, Numerical Results (80-WA/APM-3) (A) **Ja 99**

Demirjian, A. M. Electrical Conductivity and Hall Parameter Measurements in Faraday MHD Generators (80-WA/HT-9) (A) **Ap 103**; MHD Electrode Performance; Heat Transfer and Voltage Drop (80-WA/HT-10) (A) **Ap 104**

Demonstration Power Plant
Optimization of the HHT-1640 MW(th) Demonstration Nuclear Power Plant (HHT-Project) (81-GT-13) (A) **Je 105**

den Hamer, H. E. (*author*) Interordering: A New Method of Component Orientation (Studies in Mechanical Engineering, Vol. 2) (CB) **Ag 85**

Dennison, E. E. Pulsation of High Pressure Turbine (80-JPGC/Pwr-14) (A) **F 117**

Dent, R. W. The Initial Modulus of Filament Webs (80-Tex-6) (A) **F 123**

Denton, J. D. Use of a Tracer Gas Technique to Study Mixing in a Low Speed Turbine (81-GT-86) (A) **Je 111**

Department of Energy (DOE)
Coal Gasification Milestone (ES) **Ap 29**
A Corrosion-Erosion Test Rig for High-Temperature Turbine Materials Evaluation (81-GT-198) (A) **Ji 89**
Doe's Fuel Use Regulations: A Cause for Concern **Ji 37**
Elmo Bumpy Torus (ES) **S 25**
The End of DOE? (WW) **D 84**
Energy Farm (EN) **My 72**
Enlisting Solar (ES) **Ji 19**
Insulation for Conservation (NR) **S 68**
Offshore Wind Economics (C) **My 43**
Reflection on Mirror Fusion (C) **O 50**
Testing of the U.S. Solar Pilot Plant Receiver (81-Sol-3) (A) **S 80**

Deployable Radiator Systems
On Pallet Mounted Deployable Radiator Systems (81-ENAs-29) (A) **S 88**

Depooter, K. Application of Airblast Atomizing Fuel Nozzles to Two Prototype Industrial Gas Turbines (81-GT-82) (A) **Je 110**

Deposition
An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) (A) **Ja 97**
Deposition—Hot Corrosion in Gas Turbine Engines (81-GT-153) (A) **Ji 86**

Deposition Rates
A Theory for Fine Particle Deposition in 2-D Boundary Layer Flows and Application to Gas Turbines (81-GT-54) (A) **Je 108**

Derailment
Evaluation of Time-Duration Dependent Wheel Load Criteria for Wheelclimb Derailment (80-WA/DSC-21) (A) **Mr 116**

Deregulation
Storm Over S-T View (C) **Ja 52**

Deremer, R. K. HTGR-GT Primary Coolant Transient Resulting from Postulated Turbine Deblading (81-GT-19) (A) **Je 105**

Derivative Skewness
Kinematic and Dimensional Arguments on Derivative Skewness in Turbulent Shear Flows (81-FE-30) (A) **S 82**

Derricks
The Crane Truth (C) **My 42**

DeSa, S. Kinematic Mappings Part 1: Classification of Algebraic Motions in the Plane (80-DET-16) (A) **F 119**; Part 2: Rational Algebraic Motions in the Plane (80-DET-17) (A) **F 119**

Desai, P. V. Tool-Chip Contact Length in Orthogonal Machining (80-WA/Prod-23) (A) **My 83**

Desalination
Reverse Osmosis Desalination Plant (IF) **Je 72**

Desert Atmospheric Conditions
On Wind-Tunnel Simulation of Desert Atmospheric Conditions for Sand Dune Studies (81-FE-8) (A) **Ag 83**

Desiccant Bed Behavior
The Adiabatic Adsorption Desorption Characteristics of Silica Gel Beds—Part 1: Theory (80-WA/Sol-30) (A) **Ap 94**; Part 2: Curve Fits (80-WA/Sol-31) (A) **Ap 94**

Desiccant Dehumidifiers
Performance of Cross-Cooled Desiccant Dehumidifiers (80-WA/Sol-34) (A) **Ap 95**

Design Applications
Stress Fluctuation on High Speed Mechanisms (80-DET-21) (A) **F 119**

Design Control Program
Utilization of Design Change Control to Reduce Cost and Schedule Impacts on Power Projects (80-JPGC/Pwr-6) (A) **F 116**

Design Defects
Some Engineering Criteria for Determining Design Defects (80-WA/DE-16) (A) **Ap 101**

Design Deficiencies
Death, Injury and Destruction of Property by Design (80-WA/DE-13) (A) **Ap 101**

Design Engineering
Accessible Region and Synthesis of Robot Arms (80-DET-101) (A) **Mr 109**
Aeroelastic Characteristics of a Cascade of Mistuned Blades in Subsonic and Supersonic Flows (81-DET-122) (A) **N 108**
Analysis of Defective Hydrostatic Radial Bearings for 5-MJ Homopolar Generator (80-WA/DE-14) (A) **Ap 101**
Analysis of a Classical Straight Line Mechanism Using Interactive Graphics (81-DET-105) (A) **N 107**
Analysis of the Double-Link Reverser (80-DET-2) (A) **F 118**
Analysis of Drive Shaft Speed Variations in a Scotch Yoke Mechanism (80-DET-92) (A) **Mr 109**
Analysis of Fly-Shuttle Loom Noise by Multi-Channel Digital Signal Processing Techniques (81-DET-100) (A) **N 106**
Analysis and Indentification of Subsynchronous Vibration for a High Pressure Parallel Flow Centrifugal Compressor (81-DET-57) (A) **N 105**
Analysis of Plate Vibrations Using Superelements (81-DET-65) (A) **N 106**
Analysis and Synthesis of Mechanical Error in Cam-Follower Systems (80-DET-22) (A) **F 120**
Analysis and Synthesis of Mechanical Error in Geneva Mechanisms—A Stochastic Approach Part 1: External Geneva Mechanism (80-DET-24) (A) **F 120**; Part 2: Internal Geneva Mechanism (80-DET-25) (A) **F 120**
Analysis and Synthesis of a Three-Link Linkage with an Intermediate Higher Kinematic Pair (80-DET-94) (A) **Mr 109**
An Analytical and Experimental Study of the Acoustical Noise Produced by Machine Links (81-DET-93) (A) **D 90**
Analytical Prediction of Aerospace Vehicle Vibration Environments (81-DET-29) (A) **O 103**
Analytical Synthesis of Four-Bar Function Generators to Match Prescribed Differential Coefficients (80-DET-33) (A) **F 120**
Application of B-Spline Functions to the Motion Specification of Cams (80-DET-28) (A) **F 120**
Application of Euler Parameters to the Dynamic Analysis of Three-Dimensional Constrained Mechanical Systems (81-DET-123) (A) **D 91**
The Application of Finite Element Methods to the Dynamic Analysis of Flexible Spatial and Co-Planar Linkage Systems (80-DET-87) (A) **Mr 108**
Application of the Principle of Reciprocity to Flexible Rotor Balancing (81-DET-49) (A) **N 105**
Application of Structural Optimization Technique to Reduce the External Vibrations of a Gas-Turbine Engine (81-DET-143) (A) **N 108**
Application of the Theory of Conjugate Surfaces in Mechanisms Design: Part 1—General Concepts (80-DET-29) (A) **F 120**
An Approach for Dynamic Analysis of Mechanical Systems with Multiple Clearances Using Lagrangian Mechanics (81-DET-3) (A) **O 102**
Assessment of the Dynamic Quality of a Class of Dwell-Rise-Dwell Cams (80-DET-83) (A) **Mr 108**
Asymmetric Free Vibrations of Layered Conical Shells (81-DET-68) (A) **D 90**
On Attempting to Reduce Undesirable Inertial Characteristics of the Schatz Mechanism (80-DET-79) (A) **Mr 108**
Automated Design for Automotive Structures (81-DET-91) (A) **N 105**
Axial Restraint of Tubes in a U-Tube Type Steam Generator (81-DET-38) (A) **O 104**
Balancing of Flexible Rotors by the Complex Modal Method (81-DET-46) (A) **D 89**
The Balancing of Rotating Shafts by Quadratic Programming (80-DET-45) (A) **F 121**
The Basic Motion Regulation System for a Quadruped Walking Vehicle (80-DET-34) (A) **F 120**
Bearing Fault Detection Using Adaptive Noise Cancelling (81-DET-7) (A) **D 88**
A CAD/CAM Graphics System with Relative Datums and Tolerances (81-DET-108) (A) **N 107**
The Cam-Link Mechansim: A General Overview and Specific Application in Rigid Body Motion (80-DET-15) (A) **F 119**
A Case Study of the Use of Experimental Modal Analysis as a Problem Solving Technique (81-DET-31) (A) **O 103**
A Classification of Coupler-Line Envelopes From Hinged Four-Bar Linkages (80-DET-42) (A) **F 121**
Combined Friction and Material Damping of Resonant Steam Turbine Blade Response (81-DET-136) (A) **D 92**
A Comparative Study of the Lanchester Damper and the Segmented Slug Damper in Boring Bar Applications (81-DET-90) (A) **O 105**
Comparison of Equivalent Viscous Damping and Nonlinear Damping in Discrete and Continuous Vibrating Systems (81-DET-89) (A) **D 90**
Comparison of the Unbalance Responses of Jeffcott Rotors with Shaft Bow and Shaft Runout (81-DET-47) (A) **D 89**
Compilation and Compression of Mathematical Model for a Machine Transmission (80-DET-104) (A) **Mr 110**
Complete Shaking Force and Shaking Moment Balancing of link Mechanisms Using Balancing Idler Loops (80-DET-100) (A) **Mr 109**
Complex Number Synthesis of Four-Bar Path Generating Mechanisms Adjustable for Multiple Tangential Circular Arcs (80-DET-77) (A) **Mr 108**
Computer-Aided Analysis and Experimental Verification of a Motorcycle Suspension (81-DET-84) (A) **D 90**
Computer-Aided Design of Helical Compression Springs: Statically Loaded Springs of Round Wire with Residual Stresses Induced by Presetting Operation (80-DET-69) (A) **Mr 107**
Computer Aided Linkage Design Using the LINCAGES Package (81-DET-121) (A) **D 92**
Computer Design of Pneumatic Rock Drills and Mufflers (81-DET-99) (A) **D 91**
A Computer Method for the Finite Displacement Problem in Spatial Mechanisms (81-DET-110) (A) **N 107**
A Computer Simulation of a True Position Feature Pattern Gauge (81-DE-9) (A) **Ag 78**
Connection Force Analysis of Mechanisms Described by Explicit Equations of Motion in Generalized Coordinates (80-DET-75) (A) **Mr 108**
Constructuve Geometry in Three Dimensions for Computer-Aided Design (81-DET-106) (A) **N 107**
The Curvature Theory of Line Trajectories in Spatial Kinematics (80-DET-18) (A) **F 119**
The Damping of Structural Vibration by Controlled Interfacial Slip in Joints (81-DET-86) (A) **N 106**
Death, Injury and Destruction of Property by Design (80-WA/DE-13) (A) **Ap 101**
Design Considerations for Manipulator Workspace (81-DET-79) (A) **D 90**
Design and Evaluation of Drag-Link Driven Cams (80-DET-38) (A) **F 121**
Design Method to Improve the Performance of Two-Dimensional Motion Control (81-DET-120) (A) **N 108**
Design Sensitivity Analysis of Planar Mechanism and Machine Dynamics (80-DET-6) (A) **F 119**
Design of Spur Gears for Improved Efficiency (81-DE-4) (A) **Ag 78**
Determination of Damping Values for Turbine Blades (81-DET-131) (A) **N 108**
Determination of Extreme Distances of a Robot Hand—Part 1, A General Theory (80-DET-57) (A) **Mr 107**; Part 2, Robot Arms with Special Geometry (80-DET-58) (A) **Mr 106**
Determination of the Kinematic Characteristics of a Mechanisum with a Variable Length Connecting Rod (80-DET-35) (A) **F 120**
The Determination of the Lewis Form Factor and the AGMA Geometry Factor J for External Spur Gear Teeth (80-DET-59) (A) **Mr 10C**
Determination of Vibration Amplitudes and Stresses Using the Holography Interference Techniques and Finite Element Method (81-DET-132) (A) **N 108**
Development of a Correlated Finite Element Dynamic Model of a Complete Aero Engine (81-DET-74) (A) **O 104**
The Dextrous Workspace (80-DET-108) (A) **Mr 110**
A Direct Integration Technique for the Transient Analysis of Rotating Shafts (81-DET-56) (A) **D 89**
Dynamic Analysis of High Speed Rocket Sleds (81-DET-42) (A) **O 104**
Dynamic Analysis of Mechanical Systems with Intermittent Motion (81-DET-48) (A) **N 105**
Dynamic Analysis of Variators with Half Ball and Two Discs as Non-Holonomic Systems (80-DET-95) (A) **Mr 109**
Dynamic Behavior of a Moving Belt Supported on Elastic Foundation (80-DET-55) (A) **Mr 106**
Dynamic Continuous Path Synthesis of Industrial Robots Using ADAMS Computer Program (80-DET-41) (A) **F 121**
Dynamic Evaluation of a Nuclear Main Steam Isolation Valve Actuator (81-DET-32 (A) **O 104**
On the Dynamic Gear Tooth Loading as Affected by Bearing Clearances in High-Speed Machinery (81-DET-112) (A) **D 91**
Dynamic Response of Blades and Vanes to Wakes in Axial Turbomachinery (81-DET-33) (A) **O 103**
Dynamic Response of an Electric Motor-Linkage System During Startup (80-DET-54) (A) **Mr 106**
Dynamic Response of a Rectangular Plate with Initial Inperfections Under Large In-Plane Forces (81-DET-80) (A) **D 90**
On the Dynamic Simulation of Large Nonlinear Mechanical Systems: Part 1—An Overview of the Simulation Technique. Substructuring and Frequency Domain Consideration (80-DET-66) (A) **Mr 107**; Part II—The Time Integration Technique and Time Response Loop (80-DET-67) (A) **Mr 107**
Dynamic Stability of a Vibrating Hammer (81-DET-14) (A) **D 88**
Dynamics of Coupled Fluid-Structure Multiplate Systems (81-DET-145) (A) **D 91**
Dynamics of a Deploying Orbiting Beam-Type Appendage Undergoing Librations (81-DET-63) (A) **N 106**
The Effect of Approach Flow Direction on the Flow Induced Vibrations of a Triangular Tube Array (81-DET-25) (A) **N 105**
Effect of Inter-Modulation and Quasi-Periodic Instability in the Diagnosis of Rolling Element Incipient Defect (81-DET-11) (A) **N 104**
Effects of Process Parameters on Hammer Noise (81-DET-95) (A) **N 106**
An Efficient Technique for the Approximate Analysis of Vibro-Impact (81-DET-16) (A) **N 104**
Eigenfrequencies and Mode Shapes of a Free-Standing, Twisted, Tapered and Rotating Blade with Respect to an Elastically Supported Root (81-DET-125) (A) **N 108**
Eigenvalue Derivatives for Damped Torsional Vibrations (81-DET-53) (A) **N 105**
Energy Input, Vibrational Level and Machinery Noise; Some Simple Relationships (81-DET-96) (A) **N 106**
Equations for Four-Bar Line-Envelopes (80-DET-40) (A) **F 121**
Evaluation of Eigenvalues in Regions of Complicated Boundary Shape in Problems Governed by Helmholtz Equation (81-DET-76) (A) **O 105**
An Experiment on Pump Pressure Fluctuation, Vibration and Air Borne Noise Caused by Cavitation (81-DET-94) (A) **N 106**
Experimental Determination of Lateral Vibration of the 708 MVA Westinghouse Vertical Hydro Generators at Grand Coulee Dam, Washington (81-DET-70) (A) **N 106**

Exparimental Determination of Vibration Parameters Required in the Statistical Energy Analysis Method (81-DET-19) (A) **N 104**

Experimental Investigation on the Vibratory Characteristics of an Industrial Steam Turbine LP-Runner Blade With Lacing-Wire (81-DET-134) (A) **N 108**

Experimental Research on the Hydraulic Excitation Force on the Pump Shaft (81-DET-71) (A) **O 104**

Experimental Studies of Damping and Hydrodynamic Mass of a Cylinder in Confined Two-Phase Flow (81-DET-27) (A) **D 89**

Experiments on the Dynamic Behavior of a Supercritical Rotor (81-DET-59) (A) **D 89**

An Extension of Screw Theory (80-DET-20) (A) **F 119**

Fail-Safe Vibration Control Using Active Force Generators (81-DET-85) (A) **N 106**

Fatigue Considerations for Sizing Machinary Components (81-DE-8) (A) **Ag 78**

Fatigue Damage of the Locomotive Suspension Elements Under Random Loading (80-WA/DE-7) (A) **Ap 98**

The Finite Element Analysis of Flexible Components of Mechanical Systems Using a Mixed Variational Principle (80-DET-64) (A) **Mr 107**

The Finite Element Analysis of Mechanism Components Made From Fiber-Reinforced Composite Materials (80-DET-63) (A) **Mr 107**

The Finite Element Design of Linkages—A Comparison of Timoshenko and Euler Bernoulli Elements (81-DET-109) (A) **N 107**

On a Finite Element Formulation of Dynamical Torsion of Beams Including Warping Inertia and Shear Deformation Due to Nonuniform Warping (81-DET-140) (A) **D 91**

Finite Element Quasi-Static Deformation Analysis of Planar Mechanisms with External Loads Using Static Condensation (81-DET-104) (A) **N 107**

Finite Element Stress Analysis of Planar Elastic Systems Having Press Fitted Units (80-DET-98) (A) **Mr 109**

Finite Journal Bearing with Nonlinear Stiffness and Damping. Part 1: Improved Mathematical Models (81-DET-51) (A) **D 89**; Part 2: Stability Analysis (81-DET-52) (A) **N 105**

Flow-Induced Tube Vibration Tests of Typical Industrial Heat Exchanger Configurations (81-DET-37) (A) **O 104**

Flow Induced Vibrations of Heat Exchanger U-Tubes, A Simulation to Study the Effects of Asymmetric Stiffness (81-DET-20) (A) **D 89**

Flow Instability Due to a Diameter Reduction of Limited Length in a Long Annular Passage (81-DET-26) (A) **N 104**

Fluidelastic Instability of an Infinite Double Row of Circular Cylinders Subject to a Uniform Crossflow (81-DET-24) (A) **D 89**

Formulas of Natural Frequency Prediction for Thin Circular Cylinders (81-DET-77) (A) **O 105**

On the Formulation of Coupled/Uncoupled Dynamics Analysis of Blade-Disc Assemblies (81-DET-126) (A) **D 91**

General Gear Diameter Equations for the Synthesis of Multi-Speed Gear Trains (81-DET-117) (A) **D 92**

The Generalized Coordinate Selection for the Dynamics of Complex Planar Mechanical Systems (80-DET-85) (A) **Mr 108**

A Generalized Torsion Spring Design Method—A Further Refinement (80-DET-5) (A) **F 119**

Geometric Analysis of Plane Mechanisms (80-DET-110) (A) **Mr 110**

Grinding Wheel Profile for Hob Relief Grinding (81-DET-113) (A) **D 91**

Hybrid Computer-Aided Design of a Hydrostatic Vehicle Drive with Energy Accumulator (80-DET-49) (A) **F 121**

Hydraulic Resistance Effects on Hydraulic Elevator (80-DET-112) (A) **Mr 110**

Implementation of Solution Rectification Techniques in an Interactive Linkage Synthesis Program (80-DET-91) (A) **Mr 109**

Improved Methods for the Fast Fourier Transform (FFT) Calculation of the Frequency Response Function (81-DET-8) (A) **D 88**

Improving Productivity in Machining (81-DE-2) (A) **Ag 77**

Influence of the Aspect Ratio on the Dynamic Stability and Nonlinear Response of Rectangular Plates (81-DET-62) (A) **D 89**

Influence of Restoring Torque Between Truck and Car-Body on the Transversal Stability of a Railway Car at Seven, Seventeen and Nine Degrees of Freedom (81-DET-41) (A) **O 104**

Instability Mechanisms and Stability Criteria of a Group of Circular Cylinders Subjected to Cross-Flow—Part 1: Theory (81-DET-21) (A) **N 104**; Part II: Numerical Results and Discussions (81-DET-22) (A) **N 105**

Instability of Rotors in Fluid Film Bearings (81-DE-6) (A) **Ag 78**

Instantaneous Kinematics of Multiple-Degree-of-Freedom Motions (80-DET-53) (A) **Mr 106**

Instantaneous Properties of Trajectories Generated by Planar, Spherical, and Spatial Rigid Body Motions (80-DET-19) (A) **F 119**

An Interactive Computer Program for Force System Structural and Dimensional Synthesis (80-DET-61) (A) **Mr 107**

Interrelationships Between Methods Engineering and Producibility Engineering (81-DE-3) (A) **Ag 77**

An Investigation of Dual Mode Phenomena in a Mistuned Bladed Disk (81-DET-133) (A) **D 91**

Investigation of the Failure of a Large Gearset (80-WA/DE-15) (A) **Ap 101**

Investigation of Vibration of Shrouded Turbine Blades (81-DET-129) (A) **N 108**

Iterative Determination of Squeeze Film Damper Eccentricity for Flexible Rotor Systems (81-DET-87) (A) **D 90**

Kinematic Analysis of Plate Cam Profiles Not Analytically Defined (80-DET-12) (A) **F 119**

Kinematic Correction for Roller Skewing (80-DET-76) (A) **Mr 108**

Kinematic Mappings Part 1: Classification of Algebraic Motions in the Plane (80-DET-16) (A) **F 119**; Part 2: Rational Algebraic Motions in the Plane (80-DET-17) (A) **F 119**

Kinematic Synthesis of an Adjustable Six-Bar Angular-Motion Compensator (80-DET-10) (A) **F 118**

Kinematic Synthesis of Planar Two-Gear Drives With Prescribed Dwell Characteristics (81-DET-2) (A) **O 103**

On the Kinematics of the Closed Epicyclic Differential Gears (81-DET-111) (A) **N 107**

The Kinematics of Crossed Helical Gears (80-DET-37) (A) **F 121**

Kineto-Elastodynamic Analysis of Mechanisms by Finite Element Formulations (80-DET-103) (A) **Mr 110**

Large Amplitude Elliptical Plate Vibration With Transverse Shear and Rotatory Inertia Effects (81-DET-66) (A) **N 106**

A Linear Impact Tool for Diver Use (81-DE-11) (A) **Ag 78**

Linkage Characteristic Polynomials: Assembly Theorems, Uniqueness (80-DET-9) (A) **F 118**

Linkage Characteristic Polynomials: Definitions, Coefficients by Inspection (80-DET-8) (A) **Mr 106**

On Linkages and Mobile Polyhedra (80-DET-30) (A) **F 120**

A Logical Function Method for Dynamic and Design Sensitivity Analysis of Mechanical Systems with Intermittent Motion (80-DET-39) (A) **F 121**

Machine Unit with Controlled Impulse Progressive Transmission (80-DET-36) (A) **F 121**

Machining Parameter Optimization for Multistation Synchronous Machines (80-DET-60) (A) **Mr 107**

MAPS-1: Computer-Aided Design System for Preliminary Material and Manufacturing Process Selection (80-DET-51) (A) **Mr 106**

A Mathematical Basis for the Random Decrement Vibration Signature Analysis Technique (81-DET-13) (A) **N 104**

Mathematical Modelling for Predicting Effects of Structural Changes in Machine Tools (81-DET-39) (A) **O 104**

Matrix Methods in Plate Cam Geometry (80-DET-111) (A) **Mr 110**

The Measurement of Dynamic Normal and Frictional Contact Forces During Sliding (81-DET-40) (A) **O 104**

Measurement of the Influence of Flow Distortions on the Blade Vibration Amplitude in an Air Turbine (81-DET-135) (A) **D 91**

Mechanism Case Studies V (80-DET-13) (A) **F 118**

MECSYN: An Interactive Computer Graphics System for Mechanism Synthesis by Algebraic Means (80-DET-68) (A) **Mr 107**

Member Initial Curvature Effects on the Elastic Slider-Crank Mechanism Response (80-DET-72) (A) **Mr 108**

Method of Determining Locations of Unbalances in Rotating Machines (81-DET-12) (A) **D 88**

A Method of Selecting Grid Size to Account for Hertz Deformation in Finite Element Analysis of Spur Gears (81-DET-116) (A) **N 107**

Methods of Optimization for Non-Linear Problems (80-DET-65) (A) **Mr 107**

Micrographic Application for Engineering Drawings (81-DET-107) (A) **D 90**

A Microprocessor-Based Interactive Beam Analysis Program with Graphics—Dynamic and Static (81-DE-12) (A) **Ag 78**

Modal Analysis of Non-Proportionally Damped Mechanical Structures (81-DET-75) (A) **O 105**

A Model for the Analysis of Air Heater Vibrations (81-DET-34) (A) **O 103**

Model Analysis Using Helicopter Dynamic Test Data (81-DET-30) (A) **O 103**

Monotonicity in Goal and Geometric Programming (80-DET-48) (A) **Mr 106**

Motion Simulation of an Articulated Robotic Arm Subjected to Static Forces (80-DET-102) (A) **Mr 110**

3 MSP Synthesis of the RCCC Linkage: A Generalized Dual Number Approach (80-DET-99) (A) **Mr 109**

National Design Engineering Show/Conference, review (NR) **Je 74**

Natural Frequencies of Rotating Bladed Discs Using Clamped-Free Blade Modes (81-DET-124) (A) **N 108**

New Complex-Number Form of the Cubic of Stationary Curvature in a Computer-Oriented Treatment of Planar Path-Curvature Theory for Higher-Pair Rolling Contact (80-DET-90) (A) **Mr 109**

New Complex-Number Forms of the Euler-Savary Equation in a Computer-Oriented Treatment of Planar Path-Curvature Theory of Higher-Pair Rolling Contact (80-DET-89) (A) **Mr 109**

A New Concept for Force Balancing Machines for Planar Linkages—Part I: Theory (80-DET-73) (A) **Mr 108**; Part II: Application to Four-Bar Linkage and Experiment (80-DET-74) (A) **Mr 108**

A New Method of Modeling Gear Faults (81-DET-10) (A) **D 88**

A New Solution to Coulomb Friction in Mechanism Bearings: Theory and Application (80-DET-52) (A) **Mr 106**

Noise Due to Resonant Excitation of a Rotating Cylinder (81-DET-98) (A) **N 106**

Noise Reduction in Heat Recovery Steam Generators (81-DET-101) (A) **D 91**

Non-Linear Transient Analysis of Plates by Mixed Elements (81-DET-146) (A) **D 92**

Nonlinear Vibration of Layered Composite Plates Including Transverse Shear and Rotatory Inertia (81-DET-144) (A) **D 91**

A Note on Critical-Speed Solutions for Finite-Element-Based Rotor Models (81-DET-50) (A) **N 105**

A Numerical Approach to the Stability of Rotor-Bearing Systems (81-DET-61) (A) **D 90**

Numerical Scheme for Determining the Pressure Angle and Radius of Curvature of Cams (80-DET-70) (A) **Mr 107**

Optimal Design of Linear and Nonlinear Vibration Absorbers for Damped Systems (81-DET-83) (A) **N 105**

Optimal Shape Design of Turbine Blades (81-DET-128) (A) **N 108**

Optimal Synthesis of Tolerance and Clearance in Function Generating Mechanisms—A Parametric Programming Problem (81-DET-5) (A) **O 102**

Optimal Tooth Numbers for Compact Standard Spur Gear Sets (81-DET-115) (A) **D 92**

Optimization of Cam-Follower Systems with Kinematic and Dynamic Constraints (80-DET-11) (A) **F 118**

Optimization of High Speed Geneva Mechanisms (80-DET-56) (A) **Mr 107**

The Optimization Problem with Optimal Tolerance

Assignment and Full Acceptance (80-DET-47) (A) F 121
Optimum Balancing of Combined Pitching and Yawing Moments in High-Speed Machinery (80-DET-7) (A) Mr 106
Optimum Bearing-Support Damping for Rotor-Bearing Systems for Maximum Stable Operating Speed Range (81-DET-69) (A) O 104
Optimum Journal Bearing Parameters for Minimum Rotor Unbalance Response in Synchronous Whirl (81-DET-55) (A) N 105
Optimum Sensitivity Synthesis of a Cam System Incorporating Manufacturing Tolerances (80-DET-31) (A) F 119
Optimum Stochastic Synthesis of Four-Bar Spatial Function Generators (80-DET-32) (A) F 120
Optimum Synthesis of Multi-Loop Planar Mechanisms Via the Linear Partition of Design Equations (Method of No Misconceptions (80-DET-1) (A) F 118
Parametric Design Analysis of a Hybrid Composite Flywheel Using a Laminated Central Disc and a Filament Wound Outer Ring (80-DET-97) (A) Mr 110
A Parametric Study of Dynamic Response of a Discrete Mode of Turbomachinery Bladed Disk (81-DET-137) (A) D 91
Particulate Ingression Past Elastomeric Linear Motion Seals (81-DE-10) (A) Ag 78
Passage of a Rotor Through a Critical Speed (81-DET-58) (A) N 105
Planar Polar Stress Elements with Regular and Irregular Joint Freedoms for Mechanical Design (80-DET-71) (A) Mr 107
A Practical Approach to Systems Mode Analysis (81-DET-130) (A) N 108
On Predicting Vibrations in Realistically Proportioned Linkage Mechanisms (80-DET-4) (A) F 118
Prediction of Aircraft Interior Noise Using the Statistical Energy Analysis Method (81-DET-102) (A) D 90
Pressure Vessels: An Integrated Approach to Design, Analysis, and Manufacturing (81-DET-119) (A) N 107
On the Principle of Transference in Three-Dimensional Kinematics (80-DET-88) (A) Mr 109
Principles of a Heuristic Optimization Technique as an Aid in Design—An Overview (80-DET-44) (A) F 121
Probabilistic Models in Computer Automated Slider-Crank Function Generator Design (80-DET-45) (A) F 121
Protection of Continuous Structures Against Vibrations by Active Damping (81-DET-88) (A) N 106
Quasi-Square Hole with Optimum Shape to an Infinite Plate Subjected to In-Plane Loading (80-WA/DE-3) (A) Ap 98
A Quick Method for Testing if a Second Degree Polynomial Has Solutions in a Given Box (81-DET-118) (A) N 108
A Rapid Determination of Journal Bearing Characteristics Under Combined Loading (80-DET-62) (A) Mr 107
Real-Time Vibration Rate Acquisition and Signal Processing Using a Low-Cost Microcomputer (81-DET-28) (A) O 103
Residual Vibration Criteria Applied to Multiple Degree of Freedom Cam Followers (80-DET-3) (A) F 118
Response of Sandwich Panels with Viscoelastic Core Under Random Excitation at a Point (81-DET-43) (A) O 104
Response of Two Nuclear Power Plant Valves to Dynamic Excitation (81-DET-67) (A) D 90
Role of Induction Driving Motor in Transmission Dynamics (80-DET-96) (A) Mr 110
Self-Conjugate Cam Design for a High-Speed Low-Cost Indexing Mechanism (80-DET-14) (A) F 119
The Sensitivity Analysis of Cam Mechanism Dynamics (80-DET-93) (A) Mr 109
Signature Analysis Applied to Drilling (81-DET-9) (A) D 88
Simple Engineering Homework Negates Alleged Defect in Ladder Accident Case (80-WA/DE-12) (A) Ap 101
A Simple Numerical Method for the Kinematic Analysis of Spatial Mechanisms (80-DET-23) (A) F 120
The Simultaneous Analytical Synthesis of Mass and Spring Elements in Planar Mechanisms (80-DET-50) (A) Mr 106
Some Engineering Criteria for Determining Design Defects (80-WA/DE-16) (A) Ap 101
Spatial Finite Line Element Method for Determining Critical Speeds of Multi-Throw Crankshafts Considering Actual Throw Geometry (81-DET-141) (A) D 91
Special Aspects of Chatter in Milling (81-DET-18) (A) D 89
Speed Control for Universal Motors (81-DE-1) (A) Ag 77
The Spine of the Root Locus for the Viscous Damper (81-DET-4) (A) O 102
The Split Nut: An Easy to Fit Nut with a Higher Inherent Strength (80-WA/DE-6) (A) Ap 98
A Spring Coiling Machine Based on a Moving-Arbor and Retracting-Coiling-Point Concept (81-DET-1) (A) D 88
Squeeze Film Die Support as a Means of Noise Reduction in Forging Machines (81-DET-97) (A) D 90
Stability Analysis of Rotor Lifting Arrangement (80-WA/DE-10) (A) Ap 98
Stability Boundary for Pseudo-Random Parametric Excitation of a Linear Oscillator (81-DET-15) (A) D 88
Stability of Motion of Elastic Planar Linkages With Application to Slider Crank Mechanism (81-DET-6) (A) N 104
A State Space Method for Kinematic Optimization of Mechanisms and Machines (80-DET-43) (A) F 121
Statistical Properties of the Surface Pressure Distribution on a Yawed Cylinder in a Turbulent Flow Field (81-DET-35) (A) O 103
Strain Concentration Factor as a Function of Strain in a Design Application (81-DE-5) (A) Ag 78
Stress Fluctuation on High Speed Mechanisms (80-DET-21) (A) F 119
Structural Damping by Slip in Joints (81-DET-139) (A) D 92
Surface Geometry of Circular Cut Spiral Bevel Gears (81-DET-114) (A) D 92
Suspension Bounce Response of Canadian Maglev Vehicle Under Guideway Excitations, Part I: Deterministic Analysis (81-DET-81) (A) D 90; Part II: Stochastic Modeling and Analysis (81-DET-82) (A) D 90
Suspension System Synthesis for Mass Transport Vehicles with Prescribed Dynamical Behavior (81-DET-44) (A) O 104
Synthesis of an Epicyclic Gear Train for Path-Generation (80-DET-27) (A) F 119
Synthesis of the Four-Bar Function Generator: A Novel Approach (80-DET-26) (A) F 119
Synthesis of Four-Bar Linkage for Position, Velocity and Acceleration Coordination by Geometric Programming (80-DET-80) (A) Mr 106
Synthesis of Four-Bar Mechanism with Correlation Concept (80-DET-81) (A) Mr 108
Synthesis of Sliders for Plane Rigid Body Guidance (80-DET-109) (A) Mr 110
Synthesis of Two-Degree-of-Freedom Mechanism with Pulse Loading (80-DET-82) (A) Mr 108
System Analysis and Structural Criteria Concerning Diesel Locomotives (80-DET-105) (A) Mr 110
A Technique for Kinematic Modelling of Anatomical Joints (80-DET-84) (A) Mr 109
Thermal Fatigue Analysis of a Railcar Wheel Under Drag Braking (80-WA/DE-4) (A) Ap 98
Topographical Representation of Interface Pressure Distribution in a Multiple Bolt-Flange Assembly-Measurement by Means of Ultrasonic Waves (81-DE-7) (A) Ag 78
Transient Torque Produced in Main Shaft of Electric Hoist During Motor Start-Up and Emergency Brake Operations (81-DET-60) (A) N 105
Transverse Vibrations of a General Cracked-Rotor Bearing System (81-DET-45) (A) D 89
Turbulent Pressure-Velocity Measurements in a Fully Developed Concentric Annular Air Flow (81-DET-23) (A) D 89
Type and Dimensional Synthesis of Casement Window Mechanisms (80-DET-78) (A) Mr 108
Use of Cepstra in Acoustical Signal Analysis (81-DET-136) (A) D 92
Use of Figures of Merit in Computer-Aided Material and Manufacturing Process Selection (81-DET-103) (A) N 107
Vibration Analysis of a Flexible System Mounted on a Viscoelastic Sandwich Beam (81-DET-64) (A) N 106
Vibration Analysis of a Large Naval Gear (81-DET-142) (A) D 91
Vibration Measurement of a Moving Tangential Drive Belt (81-DET-36) (A) O 104
A Vibration Source in Refrigerant Compressors (81-DET-72) (A) O 104
Vibrations of an Elastically Mounted Spinning Rotor Partially Filled with Liquid (81-DET-54) (A) D 89
Vibrations of Twisted Rotating Blades (81-DET-127) (A) N 108
Vincent's Circle as a Tool for Machine Vibration Optimization Techniques (81-DET-78) (A) O 105
Wave Transmission and Energy Dissipation of Structural and Machine Joints (81-DET-17) (A) D 88
Winch Design—Good or Bad (80-WA/DE-11) (A) Ap 98
The Workspaces of a Mechanical Manipulator (80-DET-107) (A) Mr 110

Design Engineers
CAD/CAM Systems and Applications: Projections (NR) Ag 61
Turbomachines: A Guide to Design, Selection and Theory (CB) N 115

Design Methodology
1981 Design Technical Conferences (NR) N 84

Design Parameters
AA1 Corporation Receiver Design Experience in Concentrating Solar Collectors (81-Sol-1) (A) S 80

Design Procedures
Pressure Vessel Handbook, 5th Ed. (CB) Ag 85

Design Professionals
Audiovisual Competition (NB) Ji 80
The Design and Building Industry's Awards Directory (CB) F 128

Design Study
LMFBR Designs for the Twenty-First Century (81-PVP-29) (A) Ag 81

Design Systems
MAPS-1: Computer-Aided Design System for Preliminary Material and Manufacturing Process Selecton (80-DET-51) (A) Mr 106

Design Variables
The Optimization Problem with Optimal Tolerance Assignment and Full Acceptance (80-DET-47) (A) F 121
Sensitivity of Turbine Blade Temperatures to Tolerances of Design Variables (81-GT-90) (A) Je 111

Designers
Critical Materials—A New Dimension (81-GT-61) (A) Je 109
Products Liability: Are You Vulnerable? (CB) My 92

Designing Cam Systems
Design and Evaluation of Drag-Link Driven Cams (80-DET-38) (A) F 121

Designing ECM Tools
Tooling Design for ECM—A Finite Element Approach (80-WA/Prod-9) (A) My 82

Deslate, W. Application of Coal Flash Pyrolysis to Industrial Power Generation (81-IPC-Fu-4) (A) D 101

Desmond, T. P. Theoretical and Experimental Investigation of Stress Waves at a Junction of Three Bars (81-APM-16) (A) S 84

Desorption
The Adiabatic Adsorption-Desorption Characteristics of Silica Gel Beds—Part 1: Theory (80-WA/Sol-30) (A) Ap 94; Part 2: Curve Fits (80-WA/Sol-31) (A) Ap 94

Desulfurization
Fly Ash Removes SO_2 (BTR) F 56

Detection Systems
Interim Report on Water Induction Detection Studies (81-JPGC-Pwr-27) (A) N 113

Detectors
Flying Flaw Detector (BTR) Ji 56
Laser Detecton (ES) Je 25

Deterioration
Effect of Time-Dependent Flight Loads on Turbofan Engine Performance Deterioration (81-GT-203) (A) **Jl 90**
Deutsch, D. *(editor)* Process Piping Systems (CB) **N 115**
Developing Countries
Modest Technologies for a Complicated World (CB) **My 92**
Developing Fires
Release Rate Model for Developing Fires (81-HT-4) (A) **S 88**
Developing Flow
Stability of Developing Flow in a Pipe—Nonparallel Effects (81-APM-13) (A) **S 84**
Developing Nations
Technical Assistance Sought for Developing Nations (NR) **Mr 81**
Developing World
Energy in the Developing World: The Real Energy Crisis (CB) **Ap 109**
Developmental Plant
Direct Reactor Auxiliary Cooling System for the 1000-MWe LMFBR Developmental Plant (81-JPGC-NE-7) (A) **N 109**
Dextrous Workspace
The Dextrous Workspace (80-DET-108) (A) **Mr 110**
Dhalla, A. K. Classification of Clamp-Induced Stresses in Thin-Walled Pipe (81-PVP-17) (A) **Ag 80**; Implication of Stress Range for Inelastic Analysis (81-PVP-34) (A) **Ag 82**
Dhat, S. T. Optimum Friction Damping of a Flexible Rotor (81-GT-156) (A) **Jl 86**
Dhir, V. K. Forced Flow Cooling of a Volumetrically Heated Porous Layer (81-HT-46) (A) **O 97**; Shape Change of an Initially Vertical Wall Undergoing Condensation Driven Melting (81-HT-12) (A) **S 89**
Diameter Reduction
Flow Instability Due to a Diameter Reduction of Limited Length in a Long Annular Passage (81-DET-26) (A) **N 104**
Diamond Whetstone
"How-To" of Whetstone Longevity (BTR) **Mr 73**
Diamonds
Diamonds from Heaven (BTR) **Ag 48**
Diaz, L. A. Temperature Variation in the Absorber Plate of an Air Heating Flat Plate Solar Collector (80-WA/Sol-2) (A) **Ap 92**
Diaz, T. P. Qualification of Induction Heating Stress Improvement for Mitigation of Stress Corrosion Cracking (81-PVP-13) (A) **Ag 79**
Diaz-Tous, I. A. Hydraulic and Dynamic Instabilities in Feed Pumps in Large Fossil and Nuclear Applications in the U.S.A. (80-JPGC/Pwr-21) (A) **F 115**; Overview of Major Causes of Pulverizer Failures (80-JPGC/Pwr-5) (A) **F 116**
Di Benedetto, A. Kinematic Analysis of Plate Cam Profiles Not Analytically Defined (80-DET-12) (A) **F 119**
Dielectric Stack
Thermal Performance of a Dielectric Stack Exposed to Pulsed Coherent Radiation (81-ENAs-14) (A) **S 87**
Diesel Engines
COM-Powered Diesels (ES) **Mr 37**
Diesel Engine Governing with Load Feedback (81-DGP-5) (A) **My 88**
Electric Generation Utilizing Two-Stroke Crosshead Marine Diesel Engines with Rankine Bottoming Cycle (81-DGP-2) (A) **My 87**
Fifty-Fourth Landmark—The Pioneer Zephyr (NR) **Ap 74**
Method to Calculate the Balancing System of a Three-Cylinder Diesel Engine (81-DGP-8) (A) **My 88**
Slow-Speed Two-Stroke Diesel Engine Tests Using Coal-Based Fuels (81-DGP-12) (A) **My 88**
Diesel Exhaust
Diesel Exhaust Health Study (BTR) **Mr 72**
Diesel Fuel
Diesel Fuel from Biomass (ES) **S 24**
Diesel & Gas Energy Power
Diesel Engine Governing with Load Feedback (81-DGP-5) (A) **My 88**
Electric Generation Utilizing Two-Stroke Crosshead Marine Diesel Engines with Rankine Bottoming Cycle (81-DGP-2) (A) **My 87**
Emission Reduction by Combustion Modification in Two Stroke Spark Ignited Gas Engines and by Catalytic Conversion (81-DGP-7) (A) **My 87**
Emissions from Gasoline and Diesel Delivery Trucks by Chassis Transient Cycle (81-DGP-6) (A) **My 87**
Engine Fuels from Biomass (81-DGP-4) (A) **My 87**
Error Analysis in Evaluating the Mechanical Efficiency of Reciprocating Internal Combustion Engines (81-DGP-10) (A) **My 88**
An Experimental Investigation of a Low Temperature Ratio Stirling Engine (81-DGP-11) (A) **My 88**
Method to Calculate the Balancing System of a Three-Cylinder Diesel Engine (81-DGP-8) (A) **My 88**
NO_x Reduction on Large Bore SI Engines Using Catalytic Converters (81-DGP-9) (A) **My 88**
Overview of Unconventional Energy Projects in the Public Power Sector (81-DGP-1) (A) **My 87**
Precision Speed Control Systems with Throttle Disturbance Forces (81-DGP-3) (A) **My 87**
Slow-Speed Two-Stroke Diesel Engine Tests Using Coal-Based Fuels (81-DGP-12) (A) **My 88**
Diesel Locomotives
System Analysis and Structural Criteria Concerning Diesel Locomotives (80-DET-105) (A) **Mr 110**
Diesels
Cleaning Up Diesel Exhaust (ES) **Je 25**
Fuel Emulsifier (IF) **My 55**
New Fuel Injection Pump (IF) **Ap 66**
Trend to the Diesel (BTR) **Ja 62**
Diesohol
Experiment with Diesohol (BTR) **Jl 51**
Dietzmann, H. E. Emissions from Gasoline and Diesel Delivery Trucks by Chassis Transient Cycle (81-DGP-6) (A) **My 87**
Differential Absorption Lidar
Measuring Pollution by Laser (BTR) **Je 59**
Differential Sensitivity Theory
Thermal-Hydraulic Differential Sensitivity Theory (80-WA/HT-56) (A) **My 84**
Diffuse Sky Radiation
Diffuse Sky Measurements and Determination of Corrected Shadow Band Multiplication Factors (80-WA/Sol-26) (A) **Ap 94**
Diffusers
Design and Development of the Combustor Inlet Diffuser for the NASA/GE Energy Efficient Engine (81-GT-129) (A) **Jl 84**
Effects of Free-Stream Turbulence on Diffuser Performance (81-FE-4) (A) **Ag 83**
Effects of Size and Reynolds Number on Centrifugal Diffuser Performance (81-GT-8) (A) **Je 105**
Optimum Strut-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) (A) **Ag 83**
A Study on Centrifugal Impeller and Diffuser Flow (81-GT-9) (A) **Je 104**
Diffusion Flame
Smoke Filling in an Enclosure (81-HT-8) (A) **S 89**
Digested Slurry
U.S. Government Supports Biogas Research (IF) **O 85**
Digital Bispectral Analysis
Digital Bispectral Analysis of Nonlinear Wave Couplings in Fluids (81-FE-32) (A) **S 83**
Digital Circuit
Position Monitor for Mining Machines (BTR) **Mr 72**
Digital Computer Model
Steady-State Digital Computer Model for Supercritical Steam Generators (81-JPGC-Pwr-4) (A) **N 110**
Digital Computers
Analytical Modeling of Wave Interference Directional Microphones (80-WA/NC-6) (A) **F 124**
Boundary Element Techniques in Engineering (CB) **Ag 85**
Linear Optimal Estimation of Discrete Bilinear Systems (80-WA/DSC-14) (A) **Mr 115**
Digital Control
Digital Control Makes a Commercial Debut on the JT9D Engine (81-GT-199) (A) **Jl 89**
Digital Electronic Controls
Full-Authority Digital Electronic Controls for Civil Aircraft Engines (81-GT-139) (A) **Jl 85**
Digital Simulation
Linear Prediction Theory for Digital Simulation of Sea Waves (81-Pet-7) (A) **My 89**
Digitized Images
Algorithms Could Automate Cancer Diagnosis (BTR) **D 62**
DiPare, A. L. Self-Conjugate Cam Design for a High-Speed Low-Cost Indexing Mechanism (80-DET-14) (A) **F 119**
Dimensional Synthesis
Type and Dimensional Synthesis of Casement Window Mechanisms (80-DET-78) (A) **Mr 108**
Dimmer, J. P. Freed Pump Vibration Research—Interstage Fluid Annuli (80-JPGC/Pwr-20) (A) **F 117**
Dins, C. R. Material, Design, and Test Aspects of Ceramic Component Development (81-GT-179) (A) **Jl 88**
Diodes
Heat Pipe Blocks Return Flow (BTR) **O 59**
Diorio, M. L. Attributes of Light Wall Copper-Nickel Condenser Tubing (81-JPGC-Pwr-10) (A) **N 111**
Direct Firing
Modified Brayton Cycles Utilizing Alcohol Fuels (81-GT-103) (A) **Je 112**
Directories
Directory of Biological Products (BTR) **S 50**
Disabled
Greater Mobility for the Disabled (NB) **S 70**
Discharge Coefficient
Rotor-Tip Leakage: Part I—Basic Methodology (81-GT-71) (A) **Je 110**; Part II—Design Optimization Through Viscous Analysis and Experiment (81-GT-72) (A) **Je 110**
Discharge Downcomer
Safety Relief Valve Discharge Downcomer Transients for a BWR (81-FE-27) (A) **S 82**
Disconnect Valve
Maintainable Maintenance Disconnect Valve (MMDV) for On-Orbit Component Replacement (80-ENAs-42) (A) **Mr 114**
Discontinuities
Acoustic Emission Testing (BTR) **Ja 58**
Dish Collectors
French, Texas Tech Engineers Exchange Solar Information (EN) **My 71**
Disk Cams
Computer Aided Design of Disk Cams from Numerical Follower Motion Data (80-WA/DSC-9) (A) **Mr 115**
Disks
On the Formulation of Coupled/Uncoupled Dynamics Analysis of Blade-Disc Assemblies (81-DET-126) (A) **D 91**
Radiation Configuration Factors Between Disks and a Class of Axisymmetric Bodies (81-HT-56) (A) **O 97**
Dislocation Model
A Dislocation Model for Fatigue Crack Initiation (81-APM-3) (A) **S 83**
Dispersion
Diagnostic Measurements of Fuel Spray Dispersion (80-WA/HT-35) (A) **Ap 105**
Dispersion Studies
A Comparison of the Second and Third Editions of the ASME Recommended Guide for the Prediction of the Dispersion of Airborne Effluents (80-WA/APC-3) (A) **Ap 102**
Displacement Fields
The Quantitative Analysis of Three-Dimensional Displacement Fields by Single Laser Hologram (81-GT-215) (A) **Jl 91**
Displacement Method
Geometric Analysis of Plane Mechanisms (80-DET-110) (A) **Mr 110**
Disposal Systems
PCB Destruction Technology (BTR) **S 53**
Disposal of Wastes
Hazardous Waste Management (BTR) **Mr 70**
Dissimilar Materials
Optimum Design and Creep Relaxation of Dissimilar-Material Multilayer Shrink Fitted Vessels (81-PVP-30) (A) **Ag 81**
Distillate Fuels
ANSI B133.7 Survey of Gas Turbine Synthetic Liquid Fuels (81-JPGC-GT-8) (A) **D 95**
Distilleries
Alcohol Fuels Data Base Needs Input (BTR) **Ap 61**
Distorted Flow Field
The Influence of Unsteady Rotor Response on a Distorted Flow Field (81-GT-185) (A) **Jl 89**
Distortion
Influences of Thermal Properties on Distortion of High-Energy Laser Mirrors (81-HT-31) (A) **O 95**

Distributed Bilinear Systems
Controllability of Distributed Bilinear Systems; Recent Results and Open Problems (80-WA/DSC-27) (A) **Mr 116**
Distributed Networks
Energy Transport System Optimization for Distributed Networks of Solar Collectors (81-Sol-1) (A) **My 87**
Distribution
The Application of Computer Technology to Distribution (80-WA/MH-14) (A) **Ap 97**
District Heating
Utilization of Gas Turbine for District Heating Applications (81-GT-214) (A) **Jl 91**
Disturbance Forces
Precision Speed Control Systems with Throttle Disturbance Forces (81-DGP-3) (A) **My 87**
DiTaranto, R. A. Industrial Noise Pollution—Part 2: Identifying and Controlling Industrial Noise Sources **Ag 24**
Divers
Catamaran Caters to Divers (BTR) **Ap 61**
A Linear Impact Tool for Diver Use (81-DE-11) (A) **Ag 78**
Diver's Device
Diver-Steadying Device (BTR) **F 54**
Diverse Careers
Living with Technology: Issues at Mid-Career (CB) **Ag 85**
Diving Suits
Assessment of Thermal Protection Afforded by Hot Water Diving Suits (80-WA/OCE-4) (A) **Mr 117**
A Ten-Zone Thermal Manikin for Evaluating Personnel Protective Garments in Cold Air and Water Immersion Environments (80-WA/OCE-13) (A) **Mr 118**
Dixon, M. W. The Cam-Link Mechanism: A General Overview and Specific Application to Rigid Body Motion (80-DET-15) (A) **F 119**
Dobbins, W. B. Investigation of the Failure of a Large Gearset (80-WA/DE-15) (A) **Ap 101**
Doctoral Studies
Graduate Research Program for Women (EN) **Mr 82**
Dodge, F. T. Draining of Tanks with Submerged Outlets or Without Vacuum-Relief (81-FE-21) (A) **S 82;** Mixing and Dilution of Water Soluble Hazardous Chemicals Released in Navigable Rivers (81-FE-17) (A) **S 81**
Dodge, P. R. Rotor-Tip Leakage: Part 1—Basic Methodology (81-GT-71) (A) **Je 110**
Dogan, T. PWR S/RV Line Qualification to Gas Discharge Conditions (81-PVP-41) (A) **Ag 82**
Dokanish, M. A. Road Vehicle Train Response to Random Road Surface Undulations (80-WA/DSC-1) (A) **Mr 114**
Domestic Heating Systems
Bond Graph Models for Simulating HVAC Systems (80-WA/Sol-16) (A) **Ap 93**
Domestic Resources
The Future with Alcohol Fuels (ES) **S 24**
Domestic Waste Waters
A Mathematical Method for Prediction of Optimal pH and Temperature for Nitrification in Well-Aerated Natural and Domestic-Waste Waters (81-ENAs-24) (A) **O 101**
Domoto, G. A. An Experimental Investigation of Molecular Rarefaction Effects in Gas Lubricated Bearings at Ultra-Low Clearances (81-Lub-44) (A) **D 99**
Donald, G. H. Analysis and Identification of Subsynchronous Vibration for a High Pressure Parallel Flow Centrifugal Compressor (81-DET-57) (A) **N 105**
Doner, M. Evaluation of Methods for the Treatment of Mean Stress Effects on Low-Cycle Fatigue (81-GT-122) (A) **Je 114**
Dong, S. B. Elastostatic Far-Field Behavior In a Layered Half Space Under Surface Pressure (80-WA/APM-7) (A) **Ja 100**
Dong Bao-Chang Experimental Investigation of a Low Hub-to-Tip Ratio Single Stage Transonic Fan (81-GT-209) (A) **Jl 90**
Doorstops
Doorstop for the Handicapped (BTR) **D 60**
Dorgan, C. E. A Reliability Design and Catastrophic Failure Model for Exhaust Systems (80-WA/Saf-1) (A) **Ja 103**
Dormavac Process
Dormavac—Long-Term Storage of Perishable Commodities (80-ENAs-1) (A) **Mr 111**
Dornfeld, D. A. Quantitative Relationships for Acoustic Emission from Orthogonal Metal Cutting (80-WA/Prod-26) (A) **My 84;** Single Grit Simulation of the Abrasive Machining of Wood (80-WA/Prod-2) (A) **My 82**
Dorrance, J. G. Order Selection of Full and Broken Case Goods (80-WA/MH-12) (A) **Ap 97**
Double-Absorption
Analysis and Design of Hybrid Double-Absorption Cooling Systems for Low Grade Thermal Energy Applications (80-WA/HT-44) (A) **Ap 106**
Double Helix
Pressure Drops and Heat Transfer in a Double Helix Heat Exchanger (80-WA/HT-38) (A) **Ap 106**
Double Labyrinth Seals
Design and Testing of a New Double Labyrinth Seal (81-Lub-58) (A) **D 99**
Double-Link Reverser
Analysis of the Double-Link Reverser (80-DET-2) (A) **F 118**
Double-Wall Tubing
Analysis of Prestressed Double-Wall Tubing for LMFBR Steam Generators (81-PVP-25) (A) **Ag 81**
Dougan, D. R. Numerical Computation of Swirling Gas-Particle Flows: Application to Pulverized Coal Classifiers (80-WA/HT-31) (A) **Ap 105**
Doughty, S. Eigenvalue Derivatives for Damped Torsional Vibrations (81-DET-53) (A) **N 105**
Dousis, D. A. A Yard Test of Acoustic Signature Inspection of Railroad Wheels (80-WA/RT-2) (A) **F 125**
Dow, T. A. Flange Loads Measurements in a Cylindrical Roller Bearing (81-Lub-18) (A) **D 97**
Downhill Conveyor
Power Generation Using a Downhill Conveyor (80-WA/MH-15) (A) **Ap 97**
Downhole Drilling Motors
Mud Pulse Tachometer for Downhole Drilling Motors (81-Pet-3) (A) **My 88**
Downsend, D. P. Optimal Tooth Numbers for Compact Standard Spur Gear Sets (81-DET-115) (A) **D 92**
Downstream Components
Thermal Performance Analysis of an MHD Simulation Test Facility (80-WA/HT-13) (A) **Ap 104**
Draft Fans
Factors Affecting Blade Ash-Erosion in Axial Induced Draft Fans (80-JPGC/Pwr-7) (A) **F 116**
Drag
Grooves Reduce Aircraft Drag (BTR) **Mr 71**
Drag Braking
Analysis of Cyclic Thermal and Residual Stresses in CH36 Wheels Under Series of Severe Drag Braking (81-RT-10) (A) **Ag 76**
Thermal Fatigue Analysis of a Railcar Wheel Under Drag Braking (80-WA/DE-4) (A) **Ap 98**
Drag-Characterization Method
Drag-Characterization Method for Arbitrarily Rough Surfaces by Means of Rotating Disks (81-FE-33) (A) **S 83**
Drag-Link Driven Cams
Design and Evaluation of Drag-Link Driven Cams (80-DET-38) (A) **F 121**
Drainage Walls
A Liability to an Asset (ES) **Ja 20**
Drainhole Drilling
Technical Considerations in Drainhole Drilling (81-Pet-14) (A) **My 90**
Drake, R. C. Continuous Condenser Tube Cleaning—An Update (81-JPGC-Pwr-13) (A) **N 111**
Drape Coefficient
An Analytical Approach to the Effect of Laundering Processes on the Drape and Stiffness Properties of Cotton Woven Fabrics (80-Tex-1) (A) **F 122**
Drawing Speed
Design Method to Improve the Performance of Two-Dimensional Motion Control (81-DET-120) (A) **N 108**
Drawings
The Engineering Drawings of Benjamin Henry Latrobe (CB) **Mr 119**
Dressing
Adaptive Control Optimization of Grinding (80-WA/Prod-12) (A) **My 82**
Drill String
Hard-Surface Drill String Stabilizer Design Concept to Accommodate Washover Operations (81-Pet-4) (A) **My 88**
Drilling
Assessment of Bit Life Under Conditions of Rotary-Vibratory Drilling (81-Pet-15) (A) **My 89**
Drilling and Completing Multiple Branched Boreholes for In Situ Leach Mining (81-Pet-2) (A) **My 88**
Energy Sources to 1990 Predicted; U.S. Policy Called "Dead Wrong" **Mr 88**
On-Line Hole Quality Evaluation for Drilling Composite Material Using Dynamic Data (80-WA/Prod-16) (A) **My 83**
Signature Analysis Applied to Drilling (81-DET-9) (A) **D 88**
Technical Considerations in Drainhole Drilling (81-Pet-14) (A) **My 90**
Dring, R. P. An Investigation of Axial Compressor Rotor Aerodynamics (81-GT-56) (A) **Je 108**
Drinking Water
Wastewater Reuse Triggers Virus Research (NB) **D 78**
Driscoll, A. H. Long Coring Facility Winch and Cable System (80-WA/OCE-9) (A) **Ap 98**
Drive Belts
Vibration Measurement of a Moving Tangential Drive Belt (81-DET-36) (A) **O 104**
Drive Shaft
Analysis of Drive Shaft Speed Variations in a Scotch Yoke Mechanism (80-DET-92) (A) **Mr 109**
Optimum Balancing of Combined Pitching and Yawing Moments in High-Speed Machinery (80-DET-7) (A) **Mr 106**
Drive Units
Machine Unit with Controlled Impulse Progressive Transmission (80-DET-36) (A) **F 121**
Drop Cooling
A Three-Dimensional Air-Vapor-Droplet Local Interaction Model for Spray Units (81-HT-18) (A) **O 94**
Drop Models
Predictions of Drop Models for the Dispersed Flow Downstream of the Quench Front in Tube Reflood Experiments (80-WA/HT-47) (A) **Ap 106**
Drop Size Distributions
Drop-Size Distributions of Newtonian and Bingham Liquid Sprays Produced by Fan-Jet Pressure Nozzles With and Without the Preorifice (81-PID-3) (A) **My 86**
Droplet Behavior
LDA Measurement of Droplet Behavior Across Tie Plate During Dispersed Flow Portion of LOCA Reflood (80-WA/NE-4) (A) **Ja 96**
Droplet Dynamics
Droplet Dynamics in Creeping Flows (31-APM-29) (A) **S 85**
Droplets
Mechanisms and Characteristics of Combustion of Water-in-Oil Emulsion Sprays (30-WA/HT-36) (A) **Ap 105**
Numerical Study of Turbulent Droplet Flow Heat Transfer (80-WA/HT-48) (A) **Ap 106**
Drum Level Instrumentation
Drum Level Instrumentation for Reliable Boiler Operation (81-JPGC-Pwr-21) (A) **N 112**
Drumheller, D. S. An Application of Mixture Theory to Particulate Sedimentation (80-WA/APM-1) (A) **Ja 99**
Drury, E. A. Gemini T-20G-8 XM1 Tank APU (81-GT-81) (A) **Je 110**
Dry Bearings
Effects of Amplitude of Oscillation on the Wear of Dry Bearings Containing PTFE (81-Lub-6) (A) **D 96**
Dry-Cooled Commercial Plants
HTGR-GT Systems Optimization Studies (80-WA/GT-3) (A) **Ap 102**
Dry-Cooled Power Plants
Are Dry-Cooled Power Plants a Feasible Alternative? **O 34**
Dry Cooling Tower
Development and Operational Testing of a Heat Pipe Dry Cooling Tower (80-JPGC/Pwr-22) (A) **F 118**
Dry Lime
Considerations in Evaluating Wet and Dry FGD Systems (81-JPGC-Pwr-5) (A) **N 110**

Dry Porous Rock
A Model to Estimate Forces on Conical Penetrators Into Dry Porous Rock (81-APM-15) (A) **S 84**
Dry Scrubber Systems
Indiana Tests a Scrubber (ES) **Ag 20**
D'Souza, A. F. Experimental Investigation of the Effect of System Rigidity on Wear and Friction-Induced Vibrations (81-Lub-3) (A) **D 95**; Fatigue Damage of the Locomotive Suspension Elements Under Random Loading (80-WA/DE-7) (A) **Ap 98**
Dual Arm Concept
Type and Dimensional Synthesis of Casement Window Mechanisms **D 48**
Dual-Braking Systems
Four-Wheel Dual Braking (BTR) **Ag 49**
Dual Complex Numbers
3 MSP Synthesis of the RCCC Linkage: A Generalized Dual Number Approach (80-DET-99) (A) **Mr 109**
Dual Modes
An Investigation of Dual Mode Phenomena in a Mistuned Bladed Disk (81-DET-133) (A) **D 91**
Dual Pressure
Dual Pressure Steam/Immiscible Liquid Cycles for Gas Turbine Exhaust Heat Recovery (81-GT-55) (A) **Je 108**
Dual-Rotor Systems
A Study of the Modal Truncation Error in the Component Mode Analysis of a Dual-Rotor System (81-GT-144) (A) **JI 84**
Dubowsky, S. An Analytical and Experimental Study of the Acoustical Noise Produced by Machine Links (81-DET-93) (A) **D 90**; The Application of Finite Element Methods to the Dynamic Analysis of Flexible Spatial and Co-Planar Linkage Systems (80-DET-87) (A) **Mr 108**
Dubrovsky, A. F. Machine Unit with Controlled Impulse Progressive Transmission (80-DET-36) (A) **F 121**
Duclong, T. On Attempting to Reduce Undesirable Inertial Characteristics of the Schatz Mechanism (80-DET-79) (A) **Mr 108**
Ductile Steel
Ductile Axial Crack Extension in Pipes (80-WA/PVP-5) (A) **Ja 98**
Ducts
FETF Core Component Duct Lifetime: Criteria and Core Management Methods (81-PVP-23) (A) **Ag 80**
Numerical Techniques in Linear Duct Acoustics—A Status Report (80-WA/NC-2) (A) **F 124**
Duffrane, K. Fatigue and Fracture Analysis of Two Turbine Shafts (81-PVP-27) (A) **Ag 81**
Duffy, J. Determination of Extreme Distances of a Robot Hand—Part 1, A General Theory (80-DET-57) (A) **Mr 107**; Part 2, Robot Arms with Special Geometry (80-DET-58) (A) **Mr 106**; Dynamic Fracture Initiation in Metals and Preliminary Results on the Method of Caustics for Crack Propagation Measurements (81-PVP-15) (A) **Ag 80**
Duffy, R. E. A Waste Energy Power Generation Concept—The Plumemill (80-JPGC/Pwr-9) (A) **F 116**
Dumouchal, P. E. A Simplified Computer-Assisted Energy Calculation Procedure for the Evaluation of Building Architectural Concepts (80-WA/DSC-42) (A) **Mr 117**
Duncan, R. L. A Baseload Gas Turbine to Meet Utility Requirements for Reliability and Availability (81-GT-127) (A) **JI 84**; Gas Turbine Performance Deterioration and Water Wash Frequency (81-JPGC-GT-10) (A) **D 95**
Dundura, J. Stability Considerations in Thermoelastic Contact (80-WA/APM-25) (A) **Ja 102**
Dunlay, J. B. Slow-Speed Two-Stroke Diesel Engine Tests Using Coal-Based Fuels (81-DGP-12) (A) **My 88**
Dunn, J. J., Jr. *(author)* Solid Waste Conversion to Energy: Current European and U.S. Practice (CB) **Mr 119**
Dunn, M. G. Measurement of Heat Flux and Pressure in a Turbine Stage (81-GT-88) (A) **Je 111**; Nuclear Blast Response of Airbreathing Propulsion Systems: Laboratory Measurements with an Operational J-85-5 Turbojet Engine (81-GT-164) (A) **JI 87**
Dunn, S. A. The Performance of Portable Evacuation Compressors in Gas Transmission Service (81-GT-140 (A) **JI 85**
Dunwoody, A. B. A Mathematical Basis for the Random Decrement Vibration Signature Analysis Technique (81-DET-13) (A) **N 104**
Dupaski, R. B. NO_x Reduction on Large Bore SI Engines Using Catalytic Converters (81-DGP-9) (A) **My 88**
Dural-Swamy, K. Application of Coal Flash Pyrolysis to Industrial Power Generation (81-IPC-Fu-4) (A) **D 101**
Ducso, D. F. G. A Round Jet Normal to a Cross-Flow (80-WA/FE-10) (A) **My 86**
Duratherm
Hardenable Spring Alloys (IF) **S 59**
Durban, D. Drawing of Tubes (80-WA/APM-17) (A) **Ja 100**
Durelli, A. J. Quasi-Square Hole with Optimum Shape to an Infinite Plate Subjected to In-Plane Loading (80-WA/DE-3) (A) **Ap 98**
Durgin, W. W. The Design and Operation of Physical-Thermal Models (81-FE-16) (A) **S 82**
Durham, W. B. Thermal Properties of Rock Salt and Quartz Monzonite to 573 K and 50-MPa Confining Pressure (81-HT-51) (A) **O 95**
Durrant, O. W. The Development and Design of Steam/Water Solar Receivers for Commercial Application (81-Sol-4) (A) **S 80**
Dust
Characterization of Dust and Emissions form a Taconite Bulk Handling Facility (80-WA/APC-2) (A) **Ap 102**
Dust and Sand Protection for Marine Gas Turbines (81-GT-74) (A) **Je 110**
Dwell Characteristics
Kinematic Synthesis of Planar Two-Gear Drives With Prescribed Dwell Characteristics (81-DET-2) (A) **O 103**
Dwell Periods
Analysis of the Double-Link Reverser (80-DET-2) (A) **F 118**
Dwell-Rise-Dwell Cams
Assessment of the Dynamic Quality of a Class of Dwell-Rise-Dwell Cams (80-DET-83) (A) **Mr 108**
Dye Laser
Shortest Optical Pulse (BTR) **S 53**
Dyehouses
Dyehouse Energy Consideration for the 1980's (80-Tex-8) (A) **F 123**
Dynamic Absorbers
Optimal Design of Linear and Nonlinear Vibration Absorbers for Damped Systems (81-DET-83) (A) **N 105**
Dynamic Analysis
Application of Euler Parameters to the Dynamic Analysis of Three-Dimensional Constrained Mechanical Systems (81-DET-123) (A) **D 91**
Dynamic Analysis of Mechanical Systems with Intermittent Motion (81-DET-48) (A) N 105
Dynamic Behavior
Experiments on the Dynamic Behavior of a Supercritical Rotor (81-DET-59) (A) **D 89**
Dynamic Curving
Designing Perturbed Test Tracks for Evaluating Rail Vehicle Dynamic Performance (81-RT-7) (A) **Ag 76**
Dynamic Fracture
An Analysis of, and Some Observations on, Dynamic Fracture in an Impact Test Specimen (81-PVP-18) (A) **Ag 80**
Dynamic Instabilities
Hydraulic and Dynamic Instabilities in Feed Pumps in Large Fossil and Nuclear Applications in the U.S.A. (80-JPGC/Pwr-21) (A) **F 118**
Dynamic Load
Evaluation of Dynamic Load Combination Fatigue Damage (81-PVP-20) (A) **Ag 80**
Dynamic Loading
Response of Two Nuclear Power Plant Valves to Dynamic Excitation (81-DET-67) (A) **D 90**
Dynamic Loss
A Model for Dynamic Loss Response in Axial-Flow Compressors (81-GT-154) (A) **JI 86**
Dynamic Response
Dynamic Response of a Rectangular Plate with Initial Imperfections Under Large In-Plane Forces (81-DET-80) (A) **D 90**
Modeling and Dynamic Response of Maglev Vehicles Subjected to Crosswind Gusts (80-WA/DSC-8) (A) **Mr 115**
Dynamic Response Parameters
The Determination of Modal Damping Ratios from Maximum Entropy Spectral Estimates (80-WA/DSC-29) (A) **Mr 116**
Dynamic Simulation
On the Dynamic Simulation of Large Nonlinear Mechanical Systems: Part I—An Overview of the Simulation Technique. Substructuring and Frequency Domain Consideration (80-DET-66) (A) **Mr 107**; Part II—The Time Integration Technique and Time Response Loop (80-DET-67) (A) **Mr 107**
Turbine Modeling for Power Plant Controller Design (80-WA/DSC-11) (A) **Mr 115**
Dynamic Stability
Influence of the Aspect Ratio on the Dynamic Stability and Nonlinear Response of Rectangular Plates (81-DET-62) (A) **D 89**
Dynamic Systems
Comparative Study of Direct Numerical Integration Schemes in Linear and Nonlinear Analysis of a Dynamic System (80-WA/DSC-26) (A) **Mr 116**
Design Sensitivity Analysis of Planar Mechanism and Machine Dynamics (80-DET-6) (A) **F 119**
Fan/Foundation Interaction—A Simplified Calculation Procedure (80-JPGC/Pwr-10) (A) **F 117**
Modeling of Nonholonomic Dynamic Systems With Applications (81-APM-12) (A) **S 84**
Dynamic Systems and Control
An Adoptive Control Scheme for Mechanical Manipulators—Compensation of Nonlinearity and Decoupling Control (80-WA/DSC-6) (A) **Mr 114**
An Adoptive Dead Time Compensator for Process Control (80-WA/DSC-10) (A) **Mr 115**
Application of Adaptive Control to a Computer Controlled Process (80-WA/DSC-40) (A) **Mr 117**
An Appraisal of Schroeder-Phased Harmonic Signals for Bearing Identification (80-WA/DSC-34) (A) **Mr 116**
The Bilinear, Modal State Equations For Age-Dependent Growth Control (80-WA/DSC-3) (A) **Mr 114**
Bond Graphs of Age-Dependent Renewal (80-WA/DSC-4) (A) **Mr 114**
Comparative Study of Direct Numerical Integration Schemes in Linear and Nonlinear Analysis of a Dynamic System (80-WA/DSC-26) (A) **Mr 116**
A Comparison of Natural Frequency Prediction Methods for Flexible Manipulator Arms (80-WA/DSC-19) (A) **Mr 116**
Computer Aided Design of Disk Cams from Numerical Follower Motion Data (80-WA/DSC-9) (A) **Mr 115**
Computer-Aided Design of Precision Control Linkages in the Classroom (80-WA/DSC-39) (A) **Mr 117**
Control of Bilinear System with an Optimal Aim Strategy (80-WA/DSC-43) (A) **Mr 117**
Control of Force Distribution in Robotic Mechanisms Containing Closed Kinematic Chains (80-WA/DSC-32) (A) **Mr 116**
Control of a Nuclear Power Plant with Once-Through Steam Generators (80-WA/DSC-24) (A) **Mr 115**
Control Systems for CANDU PHW Reactors: Review of Design Philosophy and Principles of Control (80-WA/DSC-16) (A) **M 115**
Controllability of Distributed Bilinear Systems; Recent Results and Open Problems (80-WA/DSC-27) (A) **Mr 116**
Design of Digital Feedforward/Preview Controllers for Processes With Predetermined Feedback Controllers (80-WA/DSC-2) (A) **Mr 114**
The Determination of Modal Damping Ratios from Maximum Entropy Spectral Estimates (80-WA/DSC-29) (A) **Mr 116**
Elements of an Optimization Software Library for Engineering Design (80-WA/DSC-41) (A) **Mr 117**
Estimating Reachability Boundaries for Resource Management Systems (80-WA/DSC-5) (A) **Mr 114**
Evaluation of Time-Duration Dependent Wheel Load Criteria for Wheelclimb Derailment (80-WA/DSC-21) (A) **Mr 116**
Experimental Results in the Modeling and Control of a Small Furnace (80-WA/DSC-31) (A) **Mr 116**
HTGR-GT and Electrical Load Integrated Control (80-WA/DSC-25) (A) **Mr 116**

Hybrid Position/Force Control of Manipulators (80-WA/DSC-23) (A) **Mr 115**
On the Inverse of a Special Class of Bilinear Systems (80-WA/DSC-13) (A) **Mr 115**
Linear Optimal Estimation of Discrete Bilinear Systems (80-WA/DSC-14) (A) **Mr 115**
Longitudinal Instability in Braked Landing Gear (80-WA/DSC-12) (A) **Mr 115**
Modeling and Dynamic Response of Maglev Vehicles Subjected to Crosswind Gusts (80-WA/DSC-8) (A) **Mr 115**
New Finite Elements for Quasi-Static Deformations and Stresses in Mechanisms (80-WA/DSC-35) (A) **Mr 117**
Nonlinear State Estimation and Feedback Control and Nonlinear and Bilinear Distributed Parameter Systems (80-WA/DSC-28) (A) **Mr 116**
Nonstationary Response of Vehicles on Rough Ground—A State Space Approach (80-WA/DSC-22) (A) **Mr 116**
Optimum Path Planning for Mechanical Manipulators (80-WA/DSC-18) (A) **Mr 115**
Parametric Excitation of Rail Vehicle Wheelsets Due to Track Irregularity (80-WA/DSC-20) (A) **Mr 116**
On the Periodic Response of Cam Mechanism with Flexible Follower and Camshaft (80-WA/DSC-33) (A) **Mr 116**
The Plant Control System Design for the Clinch River Breeder Reactor Plant (80-WA/DSC-17) (A) **Mr 115**
On the Prediction of Journal-Bearing Separation in High Speed Mechanisms with Clearances (80-WA/DSC-36) (A) **Mr 117**
Railway Freight Car Field Tests (80-WA/DSC-7) (A) **Mr 115**
Road Vehicle Train Response to Random Road Surface Undulations (80-WA/DSC-1) (A) **Mr 114**
A Simplified Computer-Assisted Energy Calculation Procedure for the Evaluation of Building Architectural Concepts (80-WA/DSC-42) (A) **Mr 117**
Stability and Curving Mechanics of Rail Vehicles (80-WA/DSC-15) (A) **Mr 115**
Stochastic Properties of Compartment Models (80-WA/DSC-37) (A) **Mr 117**
A Test for Time Dependence of Multivariate Linear Systems (80-WA/DSC-30 (A) **Mr 116**
Turbine Modeling for Power Plant Controller Design (80-WA/DSC-11) (A) **Mr 115**
A Variational Formulation for the Finite Element Analysis of High-Speed Machinery (80-WA/DSC-38) (A) **Mr 117**

Dynamic Test Data
Model Analysis Using Helicopter Dynamic Test Data (81-DET-30) (A) **O 103**

Dynamic Viscoelasticity
Approximate Laplace Transform Inversion in Dynamic Viscoelasticity (80-WA/APM-29) (A) **Ja 102**

Dynamical Behavior
Suspension System Synthesis for Mass Transport Vehicles with Prescribed Dynamical Behavior (81-DET-44) (A) **O 104**

Dynamical Systems
An Unravelling Algorithm for Global Analysis of Dynamical Systems: An Application of Cell-to-Cell Mappings (80-WA/APM-27) (A) **Ja 101**

Dynamics
The Generalized Coordinate Selection for the Dynamics of Complex Planar Mechanical Systems (80-DET-85) (A) **Mr 108**

Dzwilewski, P. T. Long Coring Facility Winch and Cable System (80-WA/OCE-9) (A) **Ap 98**

E

Earney, F. CF. *(author)* Petroleum and Hard Minerals from the Sea (CB) **N 115**

Earth Shelters
Low-Profile Shelter (BTR) **Ag 44**

Earth Studies
Space Techniques Adapted for Earth Studies (BTR) **Ap 62**

Earthquake-Resistant Buildings
Earthquake-Resistant Building Design and Construction, 2nd Ed. (CB) **N 115**

Earthquakes
American Ceramic Predicts Japanese Earthquake (NB) **Ap 80**
Earthquake Research (STV) **F 71**
Moored Systems Designed to Sense Deep Ocean Earthquakes (80-WA/OCE-10) (A) **Ap 98**
Reducing Earthquake Hazards (NB) **Ap 80**

Earth's Atmosphere
Fluid Dynamics Problem Solved (BTR) **Jl 52**

Eastwood, J. A Solar Receiver For a 25-kW(e) Gas Turbine **Ja 26**

Eberle, M. K. Slow-Speed Two-Stroke Diesel Engine Tests Using Coal-Based Fuels (81-DGP-12) (A) **My 88**

Ecer, A. Transonic Flow Computations in Cascades Using Finite Element Method (81-GT-4) (A) **Je 104**

Eckert, A. F. J. Axial Restraint of Tubes in a U-Tube Type Steam Generator (81-DET-38) (A) **O 104**

Eckstein, A. A Corrosion-Erosion Test Rig for High-Temperature Turbine Materials Evaluation (81-GT-198) (A) **Jl 89**

Ecological Impacts
Hawk and Man: An Ecological Equilibrium (NB) **O 76**

Economic Choice
Keeping America Free (C) **S 49**

Economic Horizon
Cautious Economic Optimism (NB) **F 85**

Economics
Economics of Electric Utility Power Generation (CB) **Ap 108**
Engineer, Entrepreneur, Economist—All in One! **D 36**
Solar Energy: Economics vs. Energetics **My 35**
In Spite of Human Nature (C) **Ag 43**

Eddy, T. L. Radiation Heat Transfer in an Irregular Enclosure with Axial Flow (81-HT-70) (A) **O 98**

Edeskuty, F. J. Liquid Hydrogen as a Vehicular Fuel: An Evaluation **My 24**

Edgar, T. F. An Adaptive Dead Time Compensator for Process Control (80-WA/DSC-10) (A) **Mr 115**

Edge Bending
Nonlinear Corrections for Edge Bending of Shells (80-WA/APM-15) (A) **Ja 100**

Edge Cracks
Elastodynamic Analysis of an Edge Crack (80-WA/APM-6) (A) **Ja 100**
A No-Slip Edge Crack on a Bimaterial Interface (80-WA/APM-14) (A) **Ja 100**

Editorializing
Storm Over S-T View (C) **Ja 52**

Editorials
CAD/CAM in Mechanical Engineering **N 27**
Center Stage in the Decade of the Engineer **D 17**
Challenges For Sections: Are You Prepared? **Mr 35**
The Intangible Benefits **F 21**
The International Scene: Benefits and Responsibilities **My 17**
Looking Back, Yet Forward **Je 23**
New Leadership and the Future **Ag 19**
The New National Mood and ASME **S 23**
Revitalizing America—An ASME Challenge and Opportunity **Jl 17**
Technical Divisions: Are You Doing Enough for Industry? **Ap 27**
Turning Points **Ja 19**
The Washington Scene: Current and Future **O 25**

Education
Mechanical Engineering Education for the 80s **Ag 30**
NSF Grants $2.7 Million for Minority Engineer Training (NR) **Ag 62**

Educational Goals
Education Issues (C) **Ap 55**

Educational Television
Educational T.V. to Aim for Professional Audience (EN) **O 85**

Edwards, D. K. Elections to Fellow Grade **Je 102**; Finite Element Embedding with Optical Interference (81-HT-65) (A) **O 97**

Egerton, G. W. Wear and Friction of Nitrogen Ion Implanted Steel (81-Lub-20) (A) **D 97**

Ehle, P. E. A Logical Function Method for Dynamic and Design Sensitivity Analysis of Mechanical Systems with Intermittent Motion (80-DET-39) (A) **F 121**

Eichelberger, E. C. Point Admittance of Cylindrical Shells With and Without Ring-Stiffening (80-WA/NC-5) (A) **F 124**

Eigenfrequencies
Eigenfrequencies and Mode Shapes of a Free-Standing, Twisted, Tapered and Rotating Blade with Respect to an Elastically Supported Root (81-DET-125) (A) **N 108**

Eigenvalue Derivatives
Eigenvalue Derivatives for Damped Torsional Vibrations (81-DET-53) (A) **N 105**

Eigenvalues
Evaluation of Eigenvalues in Regions of Complicated Boundary Shape in Problems Governed by Helmholtz Equation (81-DET-76) (A) **O 105**

Eisenberg, M. A. A Theory of Multiaxial Anisotropic Viscoplasticity (81-APM-21) (A) **S 85**

Eiswirth, E. A. In-Situ Calibration of Flight Heat Transfer Instrumentation (81-ENAs-13) (A) **S 86**

Ejectable Nozzle
Passive Thermal Control of the ASALM-PTV Ejectable Nozzle (80-ENAs-8) (A) **Mr 111**

Ejection Forces
The Classification of Spinal Column Deformities Resulting from Aircraft Ejection Forces (80-ENAs-44) (A) **Mr 113**

Ekstedt, E. E. Evaluation of Advanced Combustors for Dry NO_x Suppression with Nitrogen Bearing Fuels in Utility and Industrial Gas Turbines (81-GT-125) (A) **Je 113**

Elam, B. F. Thermal Design of the Space Shuttle External Tank (81-ENAs-15) (A) **S 87**

Elastic Bars
Theoretical and Experimental Investigation of Stress Waves at a Junction of Three Bars (81-APM-16) (A) **S 84**

Elastic Bodies
Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plain Strain, Numerical Results (80-WA/APM-3) (A) **Ja 99**
Simplified Solution for Stresses and Deformations (81-Lub-54) (A) **D 100**

Elastic Components
The Finite Element Analysis of Mechanism Components Made From Fiber-Reinforced Composite Materials (80-DET-63) (A) **Mr 107**

Elastic Contact Stresses
Laboratory Investigation of Wheel Rail Contact Stresses for U.S. Freight Cars (80-WA/RT-8) (A) **F 126**

Elastic Cylindrical Shells
Nonlinear Response of an Elastic Cylindrical Shell to a Transient Acoustic Wave (81-APM-10) (A) **S 84**

Elastic Displacement
Singularity Consideration in Numerical Solution of Contact Stress Problems (81-Lub-53) (A) **D 99**

Elastic Edge Supports
Vibrations of Rectangular Plates With Nonuniform Elastic Edge Supports (80-WA/APM-28) (A) **Ja 102**

Elastic Follower
On the Periodic Response of Cam Mechanism with Flexible Follower and Camshaft (80-WA/DSC-33) (A) **Mr 116**

Elastic Foundation
Dynamic Behavior of a Moving Belt Supported on Elastic Foundation (80-DET-55) (A) **Mr 106**

Elastic Interconnecting Elements
Component Mode Synthesis of Large Rotor Systems (81-GT-147) (A) **Jl 85**

Elastic-Plastic Boundary
Finite-Element Solution of Elastic-Plastic Boundary—Value Problems (81-APM-17) (A) **S 84**

Elastic Pulses
Propagation of Elastic Pulses and Acoustic Emission in a Plate—Part 1: Theory (81-APM-4) (A) **S 84**; Part 2: Epicentral Responses (81-APM-5) (A) **S 83**; Part 3: General Responses (81-APM-6) (A) **S 83**

Elastic Strain
Strain Concentration Factor as a Function of Strain in a Design Application (81-DE-5) (A) **Ag 78**

Elastic Stress Range
Implication of Stress Range for Inelastic Analysis (81-PVP-34) (A) **Ag 82**

Elastic Systems
Finite Element Stress Analysis of Planar Elastic Systems Having Press Fitted Units (80-DET-98) (A) **Mr 109**

Elastic Waves
Reflection, Refraction, and Absorption of Elastic

Waves at a Frictional Interface: P and SV Motion (81-APM-18) (A) **S 84**

Elastodynamic Perturbation
Elastodynamic Analysis of an Edge Crack (80-WA/APM-6) (A) **Ja 100**

Elastohydrodynamic Line Contact
Effect of Surface Roughness on Elastohydrodynamic Line Contact (81-Lub-23) (A) **D 98**

Elastomeric Seals
Measurement of Oil Film Thickness for Application to Elastomeric Stirling Engine Rod Seals (81-Lub-9) (A) **D 96**

Elastomers
A Nonlinear Theory of Viscoelasticity for Application to Elastomers (80-WA/APM-18) (A) **Ja 100**

Elastoplastic Theory
On the Uniqueness and Stability of Endochronic Theory (80-WA/APM-24) (A) **Ja 101**

El-Bayoumi, A. A. An Analytical Approach to the Effect of Laundering Processes on the Drape and Stiffness Properties of Cotton Woven Fabrics (80-Tex-1) (A) **F 122**

Eldighidy, S. M. Deposition of Suspensions in Turbulent Flow Over a Tilted Flat Plate (81-FE-28) (A) **S 82**

Electric Automobiles
Electric Automobiles: Energy, Environmental, and Economic Prospects for the Future (CB) **Ja 104**

Electric Car
Science Expo '81 (NB) **Je 90**

Electric Energy
Assessing Energy Strategies (ES) **Je 24**
Economics of Electric Utility Power Generation (CB) **Ap 108**
A New Era of Hydroelectric Development (STV) **D 85**

Electric Generating Systems
A Baseload Gas Turbine to Meet Utility Requirements for Reliability and Availability (81-GT-127) (A) **JI 84**

Electric Generation
Coal-Fired Unit Size Selection . . . Is Bigger Better? (81-JPGC-Pwr-34) (A) **D 93**
Electric Generation Utilizing Two-Stroke Crosshead Marine Diesel Engines with Rankine Bottoming Cycle (81-DGP-2) (A) **My 87**
The Future of Nuclear Power in the U.S. **F 26**
Wind Power Economics (C) **Mr 87**

Electric Grid
Frequency Control with Closed-Cycle Gas Turbines in an Interconnected Electric Grid (80-WA/GT-5) (A) **Ap 102**

Electric Hoist
Transient Torque Produced in Main Shaft of Electric Hoist During Motor Start-Up and Emergency Brake Operations (81-DET-60) (A) **N 105**

Electric Lamp
Solar Cell Housed in Light-Bulb Enclosure (BTR) **S 55**

Electric Power
MHD Steam Power—Promise, Progress, and Problems **S 30**
Stirling Engine for Solar Thermal Power (BTR) **Ap 60**
'Wind Farm' Producing Electric Power (BTR) **My 48**

Electric Power Generation
MS9001E—A New 100-MW Gas Turbine (81-GT-31) (A) **Je 106**
The Potential for Use of Peat Blends with Coal for Electric Power Generation (81-JPGC-Fu-2) (A) **D 93**

Electric Power Plants
Advances in Environmental Control Technology for Coal-Fired Power Plants (81-JPGC-APC-2) (A) **D 100**

Electric Power Transmission
Power Transmission Milestone (ES) **Mr 36**

Electric Propulsion Plants
An LNG Carrier Adjustable Speed Gas Turbine Electric Propulsion System (81-GT-112) (A) **Je 113**

Electric Traction
Electric Traction on the Pennsylvania Railroad, 1895-1968 (CB) **My 92**

Electric Utilities
New NDE Center (ES) **Je 24**
Transmission Line Research (ES) **Je 24**

Electric Utility Companies
A Solar Hybrid System (ES) **O 26**

Electric Vehicles
Electric Flatbed Vehicle (IF) **Ja 66**

Electrical/Electronics Engineers
Computer Programmers/Engineers Top "Most-Wanted List" (NR) **F 62**

Electrical Energy
Fuel Effectiveness of Cogeneration (80-JPGC/Pwr-8) (A) **F 116**
Geothermal Energy: An Assessment **My 20**

Electrical Equipment
Nuclear Equipment Data Bank (ES) **Ja 20**

Electrical Generating Plants
Nuclear Power and Energy Uses (80-WA/NE-5) (A) **Ja 96**

Electrical Generation
Maintenance of Aero-Derived Industrial Gas Turbines (81-GT-192) (A) **JI 89**

Electrical Load
HTGR-GT and Electrical Load Integrated Control (80-WA/DSC-25) (A) **Mr 116**

Electrical Power
Picture Worth 500 Words (C) **S 48**

Electrical Resistance
Superconducting Particle Accelerator (BTR) **O 60**

Electrical Signals
Exercise for Healthy Bones (BTR) **Ap 58**

Electricity
Exhaust Heat Generates Electricity (IF) **Ag 50**
Hawaiian Hospital Taps Sun (BTR) **Ap 60**
Inflation-Free Energy (BTR) **O 61**
Old Hydro—New Life (ES) **F 22**
Optimistic OTEC Outlook (C) **Je 62**
Small Gas Turbine with Large Parabolic Dish Collectors (81-GT-201) (A) **JI 90**
Sourcebook on the Production of Electricity from Geothermal Energy (CB) **O 107**

Electricity Generation
The American Power Conference, review (NR) **Ag 54**
Role of Advanced Reactors in Electricity Generation (80-WA/NE-7) (A) **Ja 97**

Electro-Acoustical Characteristics
International Hearing Aid Agreement (BTR) **S 54**

Electrochemical Cells
CO_2 Concentrations in a Molten Carbonate Electrochemical Cell (80-ENAs-14) (A) **Mr 111**
An Investigation of the Relationship Between Partial Pressure of SO_3 and the Corrosion Potential of In 738 in Na_2SO_4 Melts at 900°C (80-WA/CD-3) (A) **Ja 97**

Electrochemical Characteristics
Field Testing and Laboratory Evaluation of Corrosion Cracking of Rotor Steels (81-JPGC-Pwr-29) (A) **N 113**

Electrode Temperature
On Heat Balance in Coal-Fired MHD Systems, Channel Heat Transfer and Electrode Temperature Distribution (80-WA/HT-11) (A) **Ap 103**

Electrodes
MHD Electrode Performance; Heat Transfer and Voltage Drop (80-WA/HT-10) (A) **Ap 104**

Electrolysis
Oxygen Generation Subsystem for Spacecraft (81-ENAs-40) (A) **S 88**

Electrolysis Subsystem
Development Status of a Preprototype Water Electrolysis Subsystem (81-ENAs-9) (A) **S 86**

Electromagnetic Radiation
Measuring Antenna Efficiency: A Lunar Approach (BTR) **My 46**

Electromechanical Cable
Development, Testing and Field Use of a Specialty Electro-Mechanical, Contra-Helical Steel Strength Member Cable (80-WA/OCE-7) (A) **Ap 97**

Electronic Digital Computers
Project Whirlwind: The History of a Pioneer Computer (CB) **Ag 84**

Electronic Technology
The Application of Computer Technology to Distribution (80-WA/MH-14) (A) **Ap 97**
The Computer and The Mechanical Engineer: A Coming of Age **N 29**

Electronics Weighing
A Closer Look at Gravimetric Feeder Design Using Load Cells (80-JPGC/Pwr-13) (A) **F 117**

Electronics
An Age of Innovation: The World of Electronics, 1930-2000 (CB) **Mr 119**

Electrons
Revolutionary Laser (BTR) **D 60**

Electro-Optical Cable
An Electro-Optical Array Support Cable (80-WA/OCE-8) (A) **Ap 97**

Electrooptics
Medical Applications of Lasers (BTR) **O 56**

Electrostatic Precipitators
Boosting Precipitator Performance (ES) **F 23**
Fires in Electrostatic Precipitators—Survey Results, Discussion and Recommendations (81-JPGC-APC-1) (A) **D 100**

Elevators
Hydraulic Resistance Effects on Hydraulic Elevator (80-DET-112) (A) **Mr 110**

Elgindy, I. Y. Analysis of Cyclic Thermal and Residual Stresses in CH36 Wheels Under Series of Severe Drag Braking (81-RT-10) (A) **Ag 76**

Elkelish, M. S. Application of the Semi-Loof Thin Shell Element to the Analysis of Aircraft Engine Structures (81-GT-104) (A) **Je 112**

Elliptical Contact
A Numerical Solution of the Thermal Elastohydrodynamic Lubrication in an Elliptical Contact (81-Lub-29) (A) **D 97**

Elliptical Plates
Large Amplitude Elliptical Plate Vibration With Transverse Shear and Rotatory Inertia Effects (81-DET-66) (A) **N 106**

Ellis, F. V. Influence of Service Exposure on Base and Weld Metal of ½ Cr- ½ Mo- ¼ V High-Pressure Steam Inlet Piping (81-PVP-24) (A) **Ag 80**

Ellis, G. S. Preprototype Vapor Compression Distillation Subsystem Development (81-ENAs-25) (A) **S 87**

Ellyin, F. Acceleration of Unbalanced Rotor Through the Resonance of Supporting Structure (81-APM-24) (A) **S 85**

El-Madany, M. M. Dynamic Response of Freight Vehicle Systems—A Performance Characterization (81-RT-4) (A) **Ag 76**

Elmadany, M. M. Road Vehicle Train Response to Random Road Surface Undulations (80-WA/DSC-1) (A) **Mr 114**

El-Masri, M. A. Critical Heat Flux in the Channels of a Closed-Loop Water-Cooled Turbine (81-HT-74) (A) **O 98**

Elsawaf, A. Application of the Semi-Loof Thin Shell Element to the Analysis of Aircraft Engine Structures (81-GT-104) (A) **Je 112**

Elston, S. T. Development of a Correlated Finite Element Dynamic Model of a Complete Aero Engine (81-DET-74) (A) **O 104**

Embrittlement
Embrittlement of 1¼ Cr- ½ Mo Steels in High-Temperature Service (81-Mat-3) (A) **O 102**

Emergency Brakes
Transient Torque Produced in Main Shaft of Electric Hoist During Motor Start-Up and Emergency Brake Operations (81-DET-60) (A) **N 105**

Emergency Facilities
Emergency Response Facilities for Davis-Besse Nuclear Power Station (81-JPGC-NE-13) (A) **N 110**

Emerging Technologies
NASA Research in Aeropropulsion **D 26**

Emerson, P. D. Vibration Measurement of a Moving Tangential Drive Belt (81-DET-36) (A) **O 104**

Emery, A. F. Computation of Radiation View Factors for Surfaces with Obstructed Views of Each Other (81-HT-57) (A) **O 83**; Ductile Axial Crack Extension in Pipes (80-WA/PVP-5) (A) **Ja 98**; Dynamic Crack Propagation in Very Ductile Materials—The Influence of Inertia (80-WA/PVP-8) (A) **Ja 98**; Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (80-WA/PVP-6) (A) **Ja 98**

Emery, F. T. Generator Monitoring System (81-JPGC-Pwr-23) (A) **N 112**

Emission Control Systems
Emission Control (ES) **Ag 21**

Emissions
Bench Scale Testing of Low-NO_x LBG Combustors (81-GT-59) (A) **Je 109**
Characterization of Dust and Emissions from a

Taconite Bulk Handling Facility (80-WA/APC-2) (A) **Ap 102**
Conceptual Design of a Coal Fired Utility Boiler for Cycling Duty (80-JPGC-Pwr-16) (A) **F 117**
Development of a Small-Scale Catalytic Gas Turbine Combustor (81-GT-43) (A) **Je 106**
Effect of Fuel Nitrogen and Hydrogen Content on Emissions in Hydrocarbon Combustion (81-GT-63) (A) **Je 109**
Effects of Inlet Conditions and Water Injection on Emissions from a Duel-Fuel Industrial Gas Turbine (81-GT-47) (A) **Je 108**
Emission Reduction by Combustion Modification in Two Stroke Spark Ignited Gas Engines and by Catalytic Conversion (81-DGP-7) (A) **My 87**
Emissions from Gasoline and Diesel Delivery Trucks by Chassis Transient Cycle (81-DGP-6) (A) **My 87**
The Influence of Premixed Combustion Flame Stabilizer Geometry on Flame Stability and Emissions (81-GT-26) (A) **Je 106**
Low Emissions Silo Combustor (81-GT-46) (A) **Je 107**
Methanol Combustion in a 26-MW Gas Turbine (81-GT-64) (A) **Je 109**
NO_x Reduction on Large Bore SI Engines Using Catalytic Converters (81-DGP-9) (A) **My 88**
Performance and Air Pollutant Emissions of an Experimental Water/Residual Oil Emulsion Burner in a Commercial Boiler (80-WA/APC-1) (A) **Ap 102**
Prediction of NO_x Emissions (81-GT-119) (A) **Je 114**
Quantitative Relationships for Acoustic Emission from Orthogonal Metal Cutting (80-WA/Prod-26) (A) **My 84**
Recent Pilot-Scale Development of a Low-NO_x, "Air-on-Wall" Corner-Fired Combustion System (81-JPGC-APC-4) (A) **D 100**
Ultra-Lean Combustion at High Inlet Temperatures (81-GT-44) (A) **Je 107**
Emmons, H. W. The Calculation of a Fire in a Large Building (81-HT-2) (A) **S 88**
Empirical Procedure
Empirical Design Procedure for the Thermohydrodynamic Behavior of Journal Bearings (81-Lub-19) (A) **D 97**
Empirical Procedure
Empirical Design Procedure for the Thermohydrodynamic Behavior of Journal Bearings (81-Lub-19) (A) **D 97**
Employee Exposure Noise
Power Plant Noise Control (81-JPGC-Pwr-15) (A) **N 111**
Employee Participation
Survey Reveals Value of "Bottom Up" Management (NR) **S 69**
Employee Problems
The Corporate Rap Session: An Employee Perspective **D 83**
Employment
Employment Forecast (EN) **S 73**
Empty/Load Braking
Three Methods of Empty/Load Braking for Freight Cars (80-WA/RT-7) (A) **F 126**
Emulsifiers
Fuel Emulsifier (IF) **My 55**
Emulsion Burners
Performance and Air Pollutant Emissions of an Experimental Water/Residual Oil Emulsion Burner in a Commercial Boiler (80-WA/APC-1) (A) **Ap 102**
Emulsion Sprays
Mechanisms and Characteristics of Combustion of Water-in-Oil Emulsion Sprays (80-WA/HT-36) (A) **Ap 105**
Enclosure Fires
Heat Transfer from a Buoyant Plume to an Unconfined Ceiling (81-HT-7) (A) **S 89**
Enclosures
Smoke Filling in an Enclosure (81-HT-8) (A) **S 89**
End Effector
Remote Mechanical Hand (BTR) **Ja 61**
End-Wall Region
Interaction of Compressor Rotor Blade Wake with Wall Boundary Layer/Vortex in the End-Wall Region (81-Gr/GT-1) (A) **O 101**
Endangered Plants
Botanists to Save Plants Threatened by Bulldozers (BTR) **Ag 47**
Endrochronic Theory
On the Uniqueness and Stability of Endochronic Theory (80-WA/APM-24) (A) **Ja 101**
Endurance Tests
Endurance Tests with Large-Bore Tapered-Roller Bearings to 2.2 Million DN (81-Lub-56) (A) **D 100**
Energetics
An Economic Comparison of Wood and Fossil Fuel Processing Systems (80-WA/Ener-1) (A) **Ap 95**
Energy in the Developing World: The Real Energy Crisis (CB) **Ap 109**
Solar Energy: Economics vs. Energetics **My 35**
Energy
The American Power Conference, review (NR) **Ag 54**
Cogeneration: The Promise is Now **Ag 22**
Energy Farm (EN) **My 72**; (ES) **Jl 18**
Energy Sufficiency in 2030—At What Price? (NR) **My 56**
"Energy": Theme of '82 World's Fair (NB) **O 77**
Expanded Socio-Technical Outlook Urged (C) **Ap 55**
Inflation-Free Energy (BTR) **O 61**
Marine Sources of Energy (CB) **D 102**
Materials & Energy **Ap 35**
McGraw-Hill Encyclopedia of Energy, 2nd Ed. (CB) **My 93**
Solar Energy Handbook (CB) **Je 116**
Solar Process Heat for Industry (IF) **Jl 60**
'81 WAM Theme—Engineering for Energy and the Environment (NR) **S 67**
"WATTec" to Feature Energy-Related Sessions (NR) **S 68**
Energy Abundance
Energy Abundance Vs. Shortage (IF) **F 60**
Energy Accumulator
Hybrid Computer-Aided Design of a Hydrostatic Vehicle Drive with Energy Accumulator (80-DET-49) (A) **F 121**
Energy Alternatives
Energy Alternatives for Third World Nations (EN) **My 70**
Storm Over S-T View (C) **Ja 50**
Energy Auditors
Energy Auditors Certification Program (NB) **Ag 63**
Energy Balance
A Modular Optimizing Calculation Method of Power Station Energy Balance and Plant Efficiency (81-GT-22) (A) **Je 105**
A Simple Model of Seasonal Sea Ice Growth (80-WA/HT-20) (A) **Ap 104**
Energy Calculation
A Simplified Computer-Assisted Energy Calculation Procedure for the Evaluation of Building Architectural Concepts (80-WA/DSC-42) (A) **Mr 117**
Energy Conservation
Assessing Energy Strategies (ES) **Je 24**
Energy Conservation in Buildings and Industrial Plants (CB) **Mr 119**
Energy Conservation in Commerce and Industry (STV) **Je 95**
Energy Conservation in the 80s (NB) **Mr 81**
Energy Conservation Through Process Modification and Control (81-PID-2) (A) **My 86**
Heat Pump Water Heaters (ES) **Ap 29**
New York Begins Major Energy Conservation Program in City Buildings (NR) **Jl 72**
Passive Solar Energy Education Center (EN) **Je 92**
System Analysis Approach to Energy Conservation in Cooling Tower—Central Chiller Plant Systems (80-ENAs-3) (A) **Mr 111**
Energy Conservation Awards
What Do an Office Building, Prison, and University Hall Have in Common?—Energy-Efficient Designs (NR) **Ja 68**
Energy Consumption
Maximum Demand Controller (IF) **Ja 66**
Energy Conversion
Optimistic OTEC Outlook (C) **Je 62**
Sixteenth Intersociety Energy Conversion Engineering Conference, preview (NR) **Je 80**
Solar Technologies Moving into 'Orbit' (NR) **O 68**
Solid Waste Conversion to Energy: Current European and U.S. Practice (CB) **Mr 119**
Waste-to-Energy Conversion—Sound, But Costly (NR) **Ja 69**
Energy Conversion Systems
Gas-Turbine-Topped Hybrid Power Plants for the Utilization of Geopressured Geothermal Resources (81-Pet-5) (A) **My 88**
The Rebirth of the Rankine Cycle **Ja 41**
A Windmill at Montauk (ES) **F 22**
Energy Crisis
Energy in the Developing World: The Real Energy Crisis (CB) **Ap 109**
Energy Demand
Minerals Crisis Rivals Energy Crisis (BTR) **F 49**
Energy Dissipation
Wave Transmission and Energy Dissipation of Structural and Machine Joints (81-DET-17) (A) **D 88**
Energy Education Center
Passive Solar Energy Education Center (EN) **Je 92**
Energy Efficiency
Energy Strategies: Toward a Solar Future (CB) **F 128**
Energy-Efficient Buildings
Pollution Problem in Energy-Tight Buildings (BTR) **Ja 58**
What Do an Office Building, Prison, and University Hall Have in Common?—Energy-Efficient Designs (NR) **Ja 68**
Energy Efficient Engines
Design and Development of the Combustor Inlet Diffuser for the NASA/GE Energy Efficient Engine (81-GT-129) (A) **Jl 84**
Energy Future
Coal-Based Energy Sources (BTR) **Ja 62**
Energy Generation
Nuclear Power: The Human Element (C) **Ap 56**
Energy Goals
Ocean Energy: Meeting the National Energy Goals (NR) **Ap 78**
Energy Independence
A Perspective on the Presidency (WW) **Ap 86**
Energy Input
Energy Input, Vibrational Level and Machinery Noise; Some Simple Relationships (81-DET-96) (A) **N 106**
Energy Laboratory
Synthetic Fuels Center (EN) **My 70**
Energy Management
Energy Management Systems (BTR) **F 52**
Symposium on Hospital Energy Management, preview (NR) **Mr 79**
Taking a Second Look at Energy Management (NR) **Je 83**
Energy Needs
Geothermal Energy: Its Past, Present and Future Contributions to the Energy Needs of Man (CB) **F 126**
Nuclear Name Calling (C) **S 49**
Energy Outlook
Solar, Nuclear, Coal, Synfuels Proponents Propose Diverse Energy Solutions (NR) **S 64**
Energy Output
Revitalizing Hydropower (ES) **Je 24**
Energy Planning
Alabama Energy Model (ES) **My 18**
Energy Policy
Energy in Transition: A Report on Energy Policy and Future Options (CB) **F 128**
Energy Projects
Overview of Unconventional Energy Projects in the Public Power Sector (81-DGP-1) (A) **My 87**
Energy Quandary
Resolving the Energy Quandary: Not Either/or But the Use of *All* Resources (NR) **Ag 54**
Energy Recovery
A Cooperative Partnership (ES) **S 24**
Refuse-Derived Fuels (80-JPGC/Fu-2) (A) **Ja 99**
Wellbore Flow Characteristics for Optimal Energy Recovery from Gulf Coast Geopressured Geothermal Sources (81-Pet-18) (A) **My 90**
Energy Research
The End of DOE? (WW) **D 84**
Energy Resources
Nuclear Power and Energy Uses (80-WA/NE-5) (A) **Ja 96**
Energy Savings
Saving Energy via the "Houston Plan" (NB) **F 65**
Energy Shortage
Energy Abundance Vs. Shortage (IF) **F 60**
Storm Over S-T View (C) **Ja 49**
Energy Solids
The Adhesion of Ice to Low Energy Solids (80-WA/HT-19) (A) **Ap 104**

Energy Sources
Consensus of Scientists on SPS: Too Costly (BTR) O 52
Energy Sources to 1990 Predicted; U.S. Policy Called "Dead Wrong" Mr 88
Free Enterprise and Energy (C) Ja 49
In Spite of Human Nature (C) Ag 43
Energy Storage Systems
An Experimental Study of a Closed Two-Phase Thermosyphon for Ice Production (81-HT-16) (A) O 94
Energy Supplies
1981 Pressure Vessel and Piping Conference, review (NR) S 64
Energy Surveys
Observations from Ten Years of Industrial Plant Energy Surveys (81-PID-4) (A) My 86
Energy Technologies
Alternative Energy Technologies and Their Impact on Performance Test Codes (80-WA/PTC-2) (A) Ap 101
Energy Transportation
Transportation Bottlenecks (ES) F 22
Engelmaier, W. Metric Meditations (C) Ag 42
Engelberger, J. F. *(author)* Robotics in Practice: Management and Applications of Industrial Robots (CB) D 102
Engine Blade Impact
The Development of a Substitute Bird Model (81-GT-23) (A) Je 108
Engine Components
Life Cycle Cost Before, During and After the Design of Aircraft Propulsion Systems (81-GT-111) (A) Je 112
Engine Cycle Selection
Engine Cycle Selection for Advanced Technology Engine Studies (81-GT-191) (A) Jl 89
Engine Disks
Advanced Alloy Improves Engine Disks (BTR) Jl 53
Engine Dynamic Simulation
Engine Dynamic Analysis With General Nonlinear Finite-Element Codes—Part 1: Overall Approach and Development of Bearing Damper Element (81-GT-151) (A) Jl 85
Engine Fuels
Engine Fuels from Biomass (81-DGP-4) (A) My 87
Engine Inlet
Ice Protection of Engine Air Inlet for Cruise Missile Applications (80-ENAs-2) (A) Mr 111
Engine Kits
Fuel-Saving Engine Kits (ES) Je 25
Engine Lathe
Hex Bed Turret Converts Any Engine Lathe to a Turret Lathe (BTR) F 55
Engine Maintenance
Engine Maintenance Cost Calculation Method (81-GT-34) (A) Je 107
Engine Simulator
Giant Engine Simulator (ES) Je 24
Engineer in Industry
Failure Analysis and Expert Witness for Products Liability—A Responsibility for the Engineering Profession (80-WA/Mgt-6) (A) Ja 103
Engineer Shortage
Shortage of Engineers Said to Affect Defense (EN) Ap 82
Shortage of Engineers Tied to World Needs (EN) Jl 74
Water Policy and Education (EN) Ap 82
Engineering
Boundary Element Techniques in Engineering (CB) Ag 85
History and Engineering (EN) O 86
Minorities in Engineering (EN) O 85
New Dean at Notre Dame (EN) Jl 74
Engineering Alliance
Egypt and U.S. Shape Engineering Alliance (NB) D 78
Engineering Computation
"Experts in Failure" Use Computer to Avoid Error (BTR) S 55
Engineering Criteria
Some Engineering Criteria for Determining Design Defects (80-WA/DE-16) (A) Ap 101
Engineering Degree
ASEE Working to Solve Critical Faculty Shortage (EN) Ag 86
Employment Forecast (EN) S 73
Engineering Departments
1981 Research Directory (EN) S 73
Engineering Design
Elements of an Optimization Software Library for Engineering Design (80-WA/DSC-41) (A) Mr 117
Engineering Drawings
The Engineering Drawings of Benjamin Henry Latrobe (CB) Mr 119
Micrographic Application for Engineering Drawings (81-DET-107) (A) D 90
Engineering Duty Officers
Engineers Needed for Naval Reserve (NR) D 76
Engineering Education
AAES Tackles Faculty Shortage Problem (EN) S 73
Beyond the Classroom (C) Mr 66
Education Issues (C) Ap 54
Engineering Education Goal (C) F 48
Engineering Education—A Model for Public Discussion (WW) N 98
Engineering Enrollment Sets New Records (EN) Ja 73
Faculty and Facilities Challenge Engineering Ed (EN) Je 91
Gas Turbine Data Acquisition Using a Microcomputer (81-GT-83) (A) Je 110
$15 Million from Exxon for Engineering Education (EN) N 94
New Venture in Engineering Education (EN) Je 92
Putting Engineering Education to Work O 28
Report Shows Decline in Quality of Engineering Education (EN) Ja 72
Underused Educational Resource (C) O 51
Engineering Education Program
CE Programs Popular at CU (EN) My 72
Engineering Educators
Mechanical Engineering Education for the 80s Ag 30
Engineering Enrollment
Engineering Enrollment Sets New Records (EN) Ja 73
Engineering Ethics
Curriculum Materials in Engineering Ethics (EN) D 79
Engineering Ethics: A Precondition for Survival (STV) Ag 71
Modern Engineering Practice: Ethical, Professional, and Legal Aspects (CB) F 128
Engineering Faculty
AAES Tackles Faculty Shortage Problem (EN) S 73
Education Issues (C) Ap 55
Engineering Education Goals (C) F 48
Mutuality of Interest, Mutuality of Need (EN) D 80
Engineering Foundation
How to Apply for Engineering Foundation Research Grants (NR) O 76
Engineering Graduates
Employers Scrambling for Engineering Graduates (EN) O 84
Mutuality of Interest, Mutuality of Need (EN) D 80
Starting Salary Offers (EN) Je 91
Engineering History
Gossamer Odyssey: The Triumph of Human-Powered Flight (CB) Ag 84
The Human Side of Engineering (C) D 56
Engineering Management
Applied Project Management Technology Workshop (NB) Ap 80
Engineering Managers
Management Decision Methods for Managers of Engineering and Research (CB) Ap 108
Engineering Model
Objectives of and Approach to Spacelab Thermal System Test Performed with the Engineering Model (81-ENAs-17) (A) S 87
Engineering Organizations
AAES Expands (NB) N 91
Engineering Plastics
Plastics Have the Edge (NB) Ap 80
Engineering Problems
Methods of Optimization for Non-Linear Problems (80-DET-65) (A) Mr 107
Engineering Productivity
Pressure Vessels: An Integrated Approach to Design, Analysis, and Manufacturing (81-DET-119) (A) N 107
Engineering Profession
Ethics and Education for Professionalism (STV) N 99
Failure Analysis and Expert Witness for Products Liability—A Responsibility for the Engineering Profession (80-WA/Mgt-6) (A) Ja 103
The Outdated "Professional Man" (C) Ag 43
Zwiep Lauded (C) F 47
Engineering Research
NSF Plans Shift from Basic Science to Engineering (NR) Ja 71
Ph.D. Science Research Programs (EN) N 94
Engineering Scholarships
NSPE Program Awards 122 Scholarships (EN) Jl 74
Engineering Schools
Shortage of Engineers Tied to World Needs (EN) Jl 74
Engineering Services
Servicing the Nuclear Customer (ES) Ag 20
Engineering in Space
Part 1—Materials Processing Je 26; Part 2—EVA Equipment for Satelite Service Je 40; Part 3—The Biological Effects of Spaceflight Je 50
Engineering Students
The Co-op Program at Berkeley: Everyone Benefits (EN) S 74
Engineering Work
The Planning and Execution of Engineering Work in a Project Environment (80-WA/Mgt-2) (A) Ja 102
Engineering World
In the Matter of Reading Matter (C) D 57
Engineering Salaries
Employers Scrambling for Engineering Graduates (EN) O 84
Engineers' Salaries—An Update Mr 40
Paychecks Lose Power (NB) Mr 81
Engineering Society
Engineering Technicians (C) O 50
Engineers
Best Bargain Around: Engineers (C) S 49
Beyond the Classroom (C) Mr 66
The Engineer's Conscience (CB) N 116
Engineers' Public Affairs Forum, preview (NR) Mr 79
Engineers' Salaries (C) My 43
Professional Courtesy Needed (C) Jl 46
Technology's the Answer, But That's Not the Question S 38
Toward Full Professionalism (C) Ja 48
Whither ASME? (STV) O 83
Engineer's Income
Industrial Engineering Pay Survey (NB) Jl 80
Engines
Binary Rankine-Cycle Engines for Solar-Thermal Power Systems (80-WA/Sol-19) (A) Ap 94
The Coal Fired Producer Gas (CFPG) Engine—An Alternative for Power and Propulsion in the 80's (81-Pet-17) (A) My 90
Development of FT9 Marine Gas Turbine (81-GT-197) (A) Jl 89
An Experimental Investigation of a Low Temperature Ratio Stirling Engine (81-DGP-11) (A) My 88
OK to Fly (ES) My 19
Quest for Land Speed Record (BTR) My 44
Trend to the Diesel (BTR) Ja 62
English Measurement System
Measure for Measure (C) F 47
Enrollments
Graduate-School Incentives Costly (C) S 49
Enthalpy
Measurement of the Enthalpy and Specific Heat of a Be_2 C-Graphite-UC_2 Reactor Fuel Material to 1980 K (80-WA/HT-54) (A) My 84
Entrained Gasifier
Mixing and Gasification of Coal in an Entrained Flow Gasifier (80-WA/HT-30) (A) Ap 105
Entrained Systems
Pyrolysis/Gasification (ES) Ap 28
Entrainment Coefficient
The Effect of Froude Number on Entrainment in Two-Dimensional Line Plumes (81-FE-6) (A) Ag 83
Entrepreneurship
The Professor with the Innovative Touch S 28
Envelope House
Forced Ventilation Envelope House: Computer Simulations (80-WA/Sol-5) (A) Ap 92
Environment
Technology, Environment, and Human Values (CB) Jl 92
'81 WAM Theme—Engineering for Energy and the Environment (NR) S 67
Environmental Carcinogens
Carcinogens in Industry and the Environment

(Pollution Engineering and Technology Series, Vol. 16) (CB) **N 116**

Environmental Consulting Firms

EEI Clean Air Act Amendments Affecting Stationary Sources (81-JPGC-APC-3) (A) **D 100**

Environmental Control

Integrated Environmental Control for Coal-Fired Power Plants (NR) **Ap 68**

Towards Minimum Power for Environmental Control in Transport Aircraft (81-ENAs-4) (A) **S 86**

Environmental Control Systems

Closed Loop Environmental Control Systems for Fighter Aircraft (81-ENAs-2) (A) **S 86**

Environmental Control System Concept Study for a Navy V/STOL Aircraft (80-ENAs-47) (A) **Mr 114**

The Factors Influencing the Formation of Li_2CO_3 from LiOH and CO_2 (80-ENAs-45) (A) **Mr 114**

A New APU for Medium Place Aircraft Environmental Control Systems (81-ENAs-1) (A) **S 85**

Optimizing the Performance of the P-3C Environmental Control System (80-ENAs-6) (A) **Mr 111**

O_2 Sensing for Environmental Control and Monitoring Systems (80-ENAs-41) (A) **Mr 113**

Environmental Control Technology

Advances in Environmental Control Technology for Coal-Fired Power Plants (81-JPGC-APC-2) (A) **D 100**

Environmental Data

What is an EIS? (STV) **Mr 87**

Environmental Economy

Unique Cooling Tower (IF) **D 64**

Environmental Engineers

Toxicology Program (EN) **Je 91**

Environmental Policy

A Glance at Three '81 WAM Sessions (NR) **O 73**

Environmental Pollutants

Indoor Pollutants (BTR) **D 62**

Environmental Protection

Slurry Pipelines of the Future **Ap 30**

Environmental Regulations

Keeping Up With Environmental Regulations (NR) **F 54**

Environmental Systems

Active Thermal Control for an Advanced Power Platform (81-ENAs-31) (A) **S 87**

Adsorption Interference in Mixtures of Trace Contaminants Flowing Through Activated Carbon Adsorber Beds (80-ENAs-17) (A) **Mr 112**

Advanced Microbial Check Valve Development (81-ENAs-45) (A) **S 88**

Air-Film Cooling Returns to Ramjets (81-ENAs-8) (A) **S 86**

Air-Freon Integrated Environmental Conditioning System for Trainer Subsonic Aircraft (81-ENAs-33) (A) **O 100**

Air Supply System Bite for Boeing 767 Airplane (81-ENAs-7) (A) **S 86**

Anti-Exposure Suits in the VP Community (80-ENAs-43) (A) **Mr 113**

Application of Improved Technology to a Preprototype Vapor Compression Distillation (VCD) Water Recovery Subsystem (81-ENAs-10) (A) **S 86**

An Approach to the Preliminary Evaluation of Closed-Ecology Life Support System (CELSS) Scenarios and Control Strategies (81-ENAs-38) (A) **O 101**

Aspects of Thermal Control Analysis of Spacelab (80-ENAs-12) (A) **Mr 111**

Atmospheric Monitoring for Submarine Applications (80-ENAs-33) (A) **Mr 113**

Atmospheric Monitoring in Submersibles (80-ENAs-31) (A) **Mr 113**

The Cabin Air Conditioning and Temperature Control System for the Boeing 767 and 757 Airplanes (80-ENAs-5) (A) **Mr 110**

Carbon Dioxide Effects on Submarines (80-ENAs-32) (A) **Mr 113**

The CELSS Program; An Overview of its Structue and Use of Computer Modeling (81-ENAs-36) (A) **S 88**

A Chamber Design for Closed Ecological Systems Research (81-ENAs-37) (A) **O 100**

The Classification of Spinal Column Deformities Resulting from Aircraft Ejection Forces (80-ENAs-44) (A) **Mr 113**

Closed Loop Environmental Control Systems for Fighter Aircraft (81-ENAs-2) (A) **S 86**

CO_2 Concentrations in a Molten Carbonate Electrochemical Cell (80-ENAs-14) (A) **Mr 111**

Decision Making Support in the Assessment of Modular Radiator Systems (80-ENAs-11) (A) **Mr 111**

Design Analysis of High Temperature Transparent Windshields for High Performance Aircraft (81-ENAs-5) (A) **S 85**

Design Challenges of High Performance Aircraft POD EOCM Cooling Systems (81-ENAs-6) (A) **O 100**

Design and Control Strategies for CELSS; Integrating Mechanistic Paradigms and Biological Complexities (81-ENAs-43) (A) **O 100**

Development of an Advanced Sabatier CO_2 Reduction Subsystem (81-ENAs-11) (A) **S 86**

Development and Integration of the Infrared Telescope for Spacelab (81-ENAs-16) (A) **S 86**

Development of a Preprototype Thermoelectric Integrated Membrane Evaporation Subsystem for Water Recovery (80-ENAs-46) (A) **Mr 114**

The Development of a Space Shuttle Research Animal Holding Facility (80-ENAs-39) (A) **Mr 113**

Development Status of a Preprototype Water Electrolysis Subsystem (81-ENAs-9) (A) **S 86**

Dormavac—Long-Term Storage of Perishable Commodities (80-ENAs-1) (A) **Mr 111**

Environmental Control of a Pressurized Equipment Container for Shuttle Flights—The Spacelab Igloo (80-ENAs-19) (A) **Mr 111**

Environmental Control System Concept Study for a Navy V/STOL Aircraft (80-ENAs-47) (A) **Mr 114**

EVA Equipment for Satellite Service (80-ENAs-48) (A) **Mr 114**

Evaluation of Biological Models Using Spacelab (80-ENAs-38) (A) **Mr 113**

Experiment Operations in Spacelab (80-ENAs-40) (A) **Mr 113**

The Factors Influencing the Formation of Li_2CO_3 from LiOH and CO_2 (80-ENAs-45) (A) **Mr 114**

Fate and Threat of Oil Slicks in the Arabian Gulf (80-ENAs-10) (A) **Mr 111**

Firefighters Integrated Response Equipment System, Phase II (81-ENAs-42) (A) **O 101**

Galileo Probe Forebody Entry Thermal Protection: Aerothermal Environments and Heat Shielding Requirements (80-ENAs-24) (A) **Mr 112**

Generic Waste Management Requirements for a Controlled Ecological Life Support System (81-ENAs-23) (A) **O 100**

Heat Pipe Avionic Thermal Control Systems (80-ENAs-4) (A) **Mr 111**

A History of the Naval Research Laboratory Contributions to Submarine Life Support Systems (80-ENAs-29) (A) **Mr 112**

Ice Protection of Engine Air Inlet for Cruise Missile Applications (80-ENAs-2) (A) **Mr 111**

In-Situ Calibration of Flight Heat Transfer Instrumentation (81-ENAs-13) (A) **S 86**

Ion-Exchange Chromatography Separation Applied to Mineral Recycle in Closed Systems (81-ENAs-21) (A) **O 100**

Life Sciences Experiments on Spacelab 1 (80-ENAs-36) (A) **Mr 113**

Lightside Atmospheric Revitalization System for Space Shuttle Orbiter (81-ENAs-26) (A) **S 87**

Magnetic Refrigeration for Spacecraft Systems (81-ENAs-47) (A) **O 101**

Maintainable Maintenance Disconnect Valve (MMDV) for On-Orbit Component Replacement (80-ENAs-42) (A) **Mr 114**

Materials Experiment Carrier Thermal Control Systems Study (81-ENAs-32) (A) **O 100**

A Mathematical Method for Prediction of Optimal pH and Temperature for Nitrification in Well-Aerated Natural and Domestic-Waste Waters (81-ENAs-24) (A) **O 101**

A Monitor for Atmospheric Composition and Contaminants in Closed Environments (80-ENAs-35) (A) **Mr 113**

NASA-AMES Life Sciences Flight Experiments Program—1980 Status Report (80-ENAs-34) (A) **Mr 113**

A New APU for Medium Place Aircraft Environmental Control Systems (81-ENAs-1) (A) **S 85**

Nitrogen Supply System Based on Hydrazine Dissociation (81-ENAs-27) (A) **O 101**

Noise Suppressors for Jet Engine Testing (80-ENAs-28) (A) **Mr 112**

Objectives of and Approach to Spacelab Thermal System Test Performed with the Engineering Model (81-ENAs-17) (A) **S 87**

Optimizing the Performance of the P-3C Environmental Control System (80-ENAs-6) (A) **Mr 111**

Oxygen Generation Subsystem for Spacecraft (81-ENAs-40) (A) **S 88**

On Pallet Mounted Deployable Radiator Systems (81-ENAs-29) (A) **S 88**

Passive Thermal Control of the ASALM-PTV Ejectable Nozzle (80-ENAs-8) (A) **Mr 111**

Personal Equipment Development for Use in Underground Mining (81-ENAs-48) (A) **O 101**

A Portable Oxygen Subsystem—Description and Preliminary Thermal Performance Prediction (80-ENAs-7) (A) **Mr 111**

The Potential Role of Aerobic Biological Waste Treatment in Regenerative Life Support Systems (81-ENAs-20) (A) **S 87**

Pre- and Post-Test Analysis for Spacelab Thermal System Test, Derivation of Tolerance and Comparison with Test Results (81-ENAs-18) (A) **S 87**

The Preparation of Calcium Superoxide in a Flowing Gas Stream and Fluidized Bed (80-ENAs-18) (A) **Mr 111**

Preprototype Vapor Compression Distillation Subsystem Development (81-ENAs-25) (A) **S 87**

The Push to Civilize Outer Space (NR) **O 86**

Regenerable CO_2 Collection for Spacecraft Application (81-ENAs-28) (A) **O 101**

A Regenerative Life Support System for Space Operations Center (SOC)—A Probable First Flight Application (81-ENAs-12) (A) **S 86**

Results of a Government and Industry Survey of the Heating Methods Used to Determine Missile Structural Temperatures (80-ENAs-26) (A) **Mr 112**

O_2 Sensing for Environmental Control and Monitoring Systems (80-ENAs-41) (A) **Mr 113**

The Shuttle Extravehicular Mobility Unit (EMU)—A Combination of New Technology and Proven Hardware (81-ENAs-41) (A) **S 88**

Shuttle Orbiter Ammonia Boiler Subsystem (81-ENAs-44) (A) **O 101**

Simulation Experiments of Phase-Change Thermal Systems (80-ENAs-25) (A) **Mr 112**

Simulation of the Transport Time Delay in Fluid Loops by Means of a Corrective Heat Flux (80-ENAs-22) (A) **Mr 112**

Space Radiator Trade Studies for the 25-kW Power System (80-ENAs-27) (A) **Mr 112**

Spacelab Thermal System Analysis Approach and First Results of System Verification Testing (80-ENAs-21) (A) **Mr 112**

Sunshade/Radiative Cooler for IRAS Infrared Astronomical Satellite (81-ENAs-3) (A) **S 86**

System Analysis Approach to Energy Conservation in Cooling Tower—Central Chiller Plant Systems (80-ENAs-3) (A) **Mr 111**

Thermal Accommodation Techniques for Payloads On-Board Spacelab (80-ENAs-20) (A) **Mr 112**

A Thermal Analysis on the Deep Quest Life Support System (80-ENAs-30) (A) **Mr 113**

The Thermal Canister Approach to Instrument Thermal Design (80-ENAs-23) (A) **Mr 112**

Thermal Control Subsystem Definition for Science and Applications Platform (81-ENAs-30) (A) **S 87**

Thermal Design of Fluid Test Cell for Growth of Crystals in Space (80-ENAs-13) (A) **Mr 111**

Thermal Design of the Space Shuttle External Tank (81-ENAs-15) (A) **S 87**

Thermal Performance of a Dielectric Stack Exposed to Pulsed Coherent Radiation (81-ENAs-14) (A) **S 87**

Thermal Vacuum Testing of Flexible Radiator Systems (81-ENAs-46) (A) **S 88**

Towards Minimum Power for Environmental Control in Transport Aircraft (81-ENAs-4) (A) **S 86**

Treatment of CELSS and PCELSS Waste to Produce Nutrients for Plant Growth (81-ENAs-19) (A) **O 100**

Unconventional Processes for Food Regeneration in Space: An Overview (81-ENAs-35) (A) **S 87**

An Update of Solid Waste Resource Recovery Technology: Improved Economics through

Potential Penetration of New Markets for Recycled Products (80-ENAs-9) (A) **Mr 111**
The Use of Nickel and Cobalt Catalysts in a Bosch Reactor (80-ENAs-15) (A) **Mr 111**
Water Recovery by Catalytic Treatment of Urine Vapor (80-ENAs-16) (A) **Mr 112**
Wet Oxidation as a Waste Treatment in Closed Systems (80-ENAs-22) (A) **O 100**

Epel, L. G. An Analysis of the Steady-Power Natural Circulation Experiments in LMFBR Plants (80-WA/HT-41) (A) **Ap 106**

Ephraim, M., Jr. The SD50 Locomotive (81-RT-2) (A) **Ag 77**

Epicentral Points
Propagation of Elastic Pulses and Acoustic Emission in a Plate—Part 1: Theory (81-APM-4) (A) **S 84**; Part 2: Epicentral Responses (81-APM-5) (A) **S 83**; Part 3: General Responses (81-APM-6) (A) **S 83**

Epicyclic Gears
On the Kinematics of the Closed Epicyclic Differential Gears (81-DET-111) (A) **N 107**

Epoxy
Earthquake-Resistant Building Design and Construction, 2nd Ed. (CB) **N 115**

Equilibrium Paths
On the Stability of Equilibrium Paths Associated With Autonomous Systems (81-APM-9) (A) **S 84**

Equipment Conditions
A Performance Monitoring Program for Coal Fired Steam-Electric Generating Plants (81-JPGC-Pwr-22) (A) **N 112**

Equipment Selection Processes
Design Concepts and Equipment Selection Processes for Northern Compressor Stations (81-GT-131) (A) **Jl 84**

Equipment Testing
Portable Computerized Power Plant Equipment Testing **Mr 58**

Erasian, A. H. Application of Zone-Matching Methodology to Interacting Submerged Multiport Diffusers (81-FE-12) (A) **Ag 83**

Erdman, A. G. Computer Aided Linkage Design Using the LINCAGES Package (81-DET-121) (A) **D 92**; New Complex-Number Form of the Cubic of Stationary Curvature in a Computer-Oriented Treatment of Planar Path-Curvature Theory for Higher-Pair Rolling Contact (80-DET-90) (A) **Mr 109**; New Complex-Number Forms of the Euler-Savary Equation in a Computer-Oriented Treatment of Planar Path-Curvature Theory of Higher-Pair Rolling Contact (80-DET-89) (A) **Mr 109**; Type and Dimensional Synthesis of Casement Window Mechanisms (80-DET-78) (A) **Mr 108**; **D 46**

Erickson, A. C. Development Status of a Preprototype Water Electrolysis Subsystem (81-ENAs-9) (A) **S 86**

Ermer, D. S. Optimization of Multipass Turning with Constraints (80-WA/Prod-22) (A) **My 83**; A Reliability Design and Catastropic Failure Model for Exhaust Systems (80-WA/Saf-1) (A) **Ja 103**

Ernst, W. A Mass is a Mass is a Mass. . . (C) **S 48**; Measure for Measure (C) **F 48**

Erosion
Use of Cascade and Small Turbine Tests to Determine Erosion of Utility Turbines (81-GT-52) (A) **Je 108**

Erosion Behavior
Operational Experience with Large Steam Turbines in Nuclear Power Plants (80-JPGC/Pwr-4) (A) **F 116**

Erosion-Corrosion
Erosion-Corrosion in the Multisolids Fluidized Bed Combustor, Part II: Burning Coal With Limestone in a 14 × 25-In. Unit with Integral Boiler (80-WA/CD-4) (A) **Ja 97**

Erosive Burning
Rocket Testing Site (EN) **O 85**

Error Analysis
Error Analysis in Evaluating the Mechanical Efficiency of Reciprocating Internal Combustion Engines (81-DGP-10) (A) **My 88**

Errors
Sorry About the Errors (C) **F 48**

Escort Missions
Regenerative Gas Turbines for Naval Escort Ships (81-GT-115) (A) **Je 112**

Espana, M. D. Control of Bilinear System with an Optimal Aim Strategy (80-WA/DSC-43) (A) **Mr 117**; Linear Optimal Estimation of Discrete Bilinear Systems (80-WA/DSC-14) (A) **Mr 115**

Espinosa, I. Suspension System Synthesis for Mass Transport Vehicles with Prescribed Dynamical Behavior (81-DET-44) (A) **O 104**

Essenhigh, R. H. A Mathematical Model of a Combustion Pot: Comparison of Theory and Experiment (80-WA/HT-32) (A) **Ap 105**

Essers, J. A. Application of a Fast Pseudo-Unsteady Method to Steady Transonic Flows in Turbine Cascades (81-GT-124) (A) **Je 112**

Estimating Shape Factor
Sampling for Confidence Interval Estimation of the Fiber Shape Factor (80-Tex-5) (A) **F 122**

Ethanol
Alcohol Fuel Vehicle Testing (ES) **Ja 21**
Wanted—Ethanol Entrepreneurs (ES) **Ap 28**

Etherington, J. F. Pressure Relief Valve Noise Attenuation (81-PVP-38) (A) **Ag 82**

Ethics
Engineering Ethics: A Precondition for Survival (STV) **Ag 71**
Ethics and Education for Professionalism (STV) **N 99**
Modern Engineering Practice: Ethical, Professional, and Legal Aspects (CB) **F 128**

Ethics Case
ASME Council Action on Ethics Case (NR) **Jl 70**

Etsion, I. Dynamic Analysis of Noncontacting Face Seals (81-Lub-10) (A) **D 96**; Observation of Pressure Variation in the Cavitation Region of Submerged Journal Bearings (81-Lub-11) (A) **D 96**

Euler Parameters
Application of Euler Parameters to the Dynamic Analysis of Three-Dimensional Constrained Mechanical Systems (81-DET-123) (A) **D 91**

Euler-Savary Equation
New Complex-Number Form of the Cubic of Stationary Curvature in a Computer-Oriented Treatment of Planar Path-Curvature Theory for Higher-Pair Rolling Contact (80-DET-90) (A) **Mr 109**

New Complex-Number Forms of the Euler-Savary Equation in a Computer-Oriented Treatment of Planar Path-Curvature Theory of Higher-Pair Roling Contact (80-DET-89) (A) **Mr 109**

Evaluation
Passed With Flying Colors! (ES) **O 27**

Evan-Iwanowski, R. M. Influence of the Aspect Ratio on the Dynamic Stability and Nonlinear Response of Rectangular Plates (81-DET-62) (A) **D 89**

Evans, J. L. Development of an Instrumented Marine Riser Joint (81-Pet-25) (A) **My 90**

Evaporation
Laminar Wavy-Film Flow: Part II—Condensation and Evaporation (81-HT-14) (A) **S 89**
A Model for Drying on Adiabatic Saturation Lines (80-Tex-2) (A) **F 122**

Evaporative Cooler
Solar Assisted Desiccant Dehumidification and Cooling with an Indirect Evaporative Cooler (80-WA/Sol-29) (A) **Ap 94**

Evaporative Heat Loss
Measurements of Effective Thermal Conductivity and Evaporative Heat Loss in Granular Porous Media (81-HT-58) (A) **O 98**

Evaporators
Operating Experience of the EBR-II Steam Generating System (81-JPGC-NE-4) (A) **N 110**

Evers, J. L. Hydraulic Borehole Mining (81-Pet-6) (A) **My 89**

Evinrude Motor
ASME Landmarks Program (NR) **N 88**

Evolution
Small-Scale Observations of Wind Effects Penetration in the Open Sea (80-WA/HT-66) (A) **My 85**

Executive Director
Burke Nelson Named New Executive Director of ASME (NR) **Ag 61**
Executive Director Search (NR) **F 63**

Executive Jobs
Staffing the Civil Service (WW) **Je 94**

Exercise
Exercise for Healthy Bones (BTR) **Ap 58**

Exhaust
Formation of SO_3 in Gas Turbines (81-GT-42) (A) **Je 106**

Exhaust Emissions
Evaluation of Concepts for Controlling Exhaust Emissions from Minimally Processed Petroleum and Synthetic Fuels (81-GT-157) (A) **Jl 86**

Exhaust Heat
Exhaust-Heat Air Conditioning (IF) **Mr 76**
Exhaust Heat Generates Electricity (IF) **Ag 50**

Exhaust Heat Recovery
Dual Pressure Steam/Immiscible Liquid Cycles for Gas Turbine Exhaust Heat Recovery (81-GT-55) (A) **Je 108**

Exhaust Noise
Energy Efficient Muffler for Reduction of Exhaust Noise Generated by a Pneumatic Grinder (80-WA/NC-9) (A) **F 124**

Exhaust Particulates
Cleaning Up Diesel Exhaust (ES) **Je 25**
Diesel Exhaust Health Study (BTR) **Mr 72**

Exhaust Pipes
On the Acoustical Implications of Vortex Shedding from an Exhaust Pipe (80-WA/NC-16) (A) **F 125**

Exhaust Systems
A Reliability Design and Catastrophic Failure Model for Exhaust Systems (80-WA/Saf-1) (A) **Ja 103**

Exhaust Volutes
Aerodynamic Design and Experimental Study of Marine Gas Turbine Exhaust Volutes (81-GT-143) (A) **Jl 84**

Exhibitions
Hanover Fair: A New Concept (IF) **Ja 66**

Experimental Modal Analysis
A Case Study of the Use of Experimental Modal Analysis as a Problem Solving Technique (81-DET-31) (A) **O 103**

Experiments
A Glance at Three '81 WAM Sessions (NR) **O 73**
Life Sciences Experiments on Spacelab 1 (80-ENAs-36) (A) **Mr 113**

Explosive Nuts
Soft Container for Explosive Nuts (BTR) **S 52**

Export Controls
Should Government Control Exports of Unsafe Products? (STV) **Ja 77**

Exporting Coal
Coal on the Comeback (ES) **Jl 19**
No Waiting in Line (ES) **D 25**

Exports
Selling Solar Overseas (ES) **My 18**

External Geneva Mechanisms
Analysis and Synthesis of Mechanical Error in Geneva Mechanisms—A Stochastic Approach Part 1: External Geneva Mechanism (80-DET-24) (A) **F 120**; Part 2: Internal Geneva Mechanism (80-DET-25) (A) **F 120**

External Loads
Finite Element Quasi-Static Deformation Analysis of Planar Mechanisms with External Loads Using Static Condensation (81-DET-104) (A) **N 107**

External Tank
Thermal Design of the Space Shuttle External Tank (81-ENAs-15) (A) **S 87**

External Vibrations
Application of Structural Optimization Technique to Reduce the External Vibrations of a Gas-Turbine Engine (81-DET-143) (A) **N 108**

Extra-Vehicular Activity
EVA Equipment for Satellite Service (80-ENAs-48) (A) **Mr 114**

Extravehicular Mobility Unit
The Shuttle Extravehicular Mobility Unit (EMU)—A Combination of New Technology and Proven Hardware (81-ENAs-41) (A) **S 88**

Extreme Distances
Determination of Extreme Distances of a Robot Hand—Part 1, A General Theory (80-DET-57) (A) **Mr 107**; Part 2, Robot Arms with Special Geometry (80-DET-58) (A) **Mr 106**

Exxon Education Foundation
$15 Million from Exxon for Engineering Education (EN) **N 94**

Eye Defects
Eye Care Space Spinoff (BTR) **F 51**

Eyesight Problems
Eye Care Space Spinoff (BTR) **F 51**

Ezekoye, L. I. Spurious Opening Hydraulic-Assisted, Pilot-Operated Valves—An Investigation of the Phenomenon (81-PVP-39) (A) **Ag 82**

F

Fabrication
Fabrication of Injection Molded Sintered Alpha SiC Turbine Components (81-GT-161) (A) **Jl 86**
Water-Cooled Cas Turbine Monometallic Nozzle Fabrication and Testing (81-GT-162) (A) **Jl 87**
Fabrication Techniques
Cooled Radial In-Flow Turbines for Advanced Gas Turbine Engines (81-GT-213) (A) **Jl 90**
Fabrics
Development of Multi-Bar Weft-Insert Warp Knit Glass Fabrics for Industrial Applications (80-Tex-7) (A) **F 123**
Fabris, G. Multiple-Scale Turbulence Modeling of Free Turbulent Flows (81-FE-20) (A) **S 82**
Face Seals
Analysis of Face Seals with Shrouded Pockets (81-Lub-49) (A) **D 99**
Dynamic Analysis of Noncontacting Face Seals (81-Lub-10) (A) **D 96**
Faculty
Faculty and Facilities Challenge Engineering Ed (EN) **Je 91**
Underused Educational Resource (C) **O 51**
Faculty/Industry Conferences
University-Industry Program at Columbia (EN) **F 68**
Faculty Shortage
AAES Tackles Faculty Shortage Problem (EN) **S 73**
ASEE Working to Solve Critical Faculty Shortage (EN) **Ag 66**
$15 Million from Exxon for Engineering Education (EN) **N 94**
Shortage of Engineers Said to Affect Defense (EN) **Ap 82**
Fagerlund, A. C. Sizing Valves for Two-Phase and Subcooled Liquid Flows (80-WA/HT-64) (A) **My 85**; Sound Transmission Through A Cylindrical Pipe Wall (80-WA/NC-3) (A) **F 123**
Failure
"Experts in Failure" Use Computer to Avoid Error (BTR) **S 55**
Failure Analysis
Presentation of Failure Analysis Data by the Fatigue Fracture Mechanics Diagram (81-PVP-11) (A) **Ag 80**
Fairmont Plant Project
Trigeneration (ES) **Mr 36**
Falconer, D. R. Spatial Finite Line Element Method for Determining Critical Speeds of Multi-Throw Crankshafts Considering Actual Throw Geometry (81-DET-141) (A) **D 91**
Fall Forecast
Fall Forecast for Congress (WW) **O 82**
Falquer, J. A Simple Numerical Method for the Kinematic Anlaysis of Spatial Mechanisms (80-DET-23) (A) **F 120**
Family Cars
The Cars of the 1990s (NR) **D 75**
Fan Blades
Interactive Multi-Mode Blade Impact Analysis (81-GT-79) (A) **Je 110**
Superhybrid Composite Blade Impact Studies (81-GT-24) (A) **Je 106**
Fan Rotor Dynamics
Fan/Foundation Interaction—A Simplified Calculation Procedure (80-JPGC/Pwr-10) (A) **F 117**
Fans
A Comparison of Two Alternative Methods for Defining Fan Performance (80-WA/PTC-1) (A) **Ap 101**
Designing for Three Parallel ID Fan Operation (81-JPGC-Pwr-8) (A) **N 111**
Experimental Investigation of a Low Hub-to-Tip Ratio Single Stage Transonic Fan (81-GT-209) (A) **Jl 90**
Farag, I. H. A Mixed Gray-Gas Model to Calculate Water Vapor Standard Emissivities (81-HT-63) (A) **O 97**
Farm Facilities
Energy Farm (ES) **Jl 18**
Farms
Energy Farm (EN) **My 72**
Farrell, C. Full Potential Solution of Transonic Quasi-3-D Flow Through a Cascade Using Artificial Compressibility (81-GT-70) (A) **Je 109**
Farrell, R. A. Effects of Inlet Conditions and Water Injection on Emissions from a Duel-Fuel Industrial Gas Turbine (81-GT-47) (A) **Je 108**
Farrell, W. M. Mechanical Design of a High-Efficiency 7.5-MW (10,000-hp) Gas Turbine (81-GT-210) (A) **Jl 90**
Fast Breeder Reactors
The Role of Advanced Converters (80-WA/NE-6) (A) **Ja 96**
Fast Crack Propagation
Dynamic Crack Propagation Analysis of the SEN Specimen by a Numerical Method (80-WA/PVP-2) (A) **Ja 97**
Fast Flux Test Facility
Operational Safety at the FFTF (81-JPGC-NE-6) (A) **N 109**
Fast Fourier Transform Machines
Improved Methods for the Fast Fourier Transform (FFT) Calculation of the Frequency Response Function (81-DET-8) (A) **D 88**
Fatemi, B. An Efficient Technique for the Approximate Analysis of Vibro-Impact (81-DET-16) (A) **N 104**
Fathalah, K. A. Deposition of Suspensions in Turbulent Flow Over a Tilted Flat Plate (81-FE-28) (A) **S 82**
Fatigue
A Dislocation Model for Fatigue Crack Initiation (81-APM-3) (A) **S 83**
Effect of Grain Flow Orientation on Rolling Contact Fatigue Life of AISI M-50 (81-Lub-57) (A) **D 100**
Evaluation of Methods for the Treatment of Mean Stress Effects on Low-Cycle Fatigue (81-GT-122) (A) **Je 114**
Fatigue and Fracture Analysis of Two Turbine Shafts (81-PVP-27) (A) **Ag 81**
Monitoring of Nuclear Power Plant Reactor Vessel Thermal Transients and Fatigue Usage Factors (81-PVP-12) (A) **Ag 79**
Thermal Fatigue Analysis of a Railcar Wheel Under Drag Braking (80-WA/DE-4) (A) **Ap 98**
Fatigue Analysis
Fatigue Analysis of Railroad Freight Car Truck Bolster (80-WA/RT-6) (A) **F 126**
Fatigue-Crack Growth
The Effect of Product Form Upon Fatigue-Crack Growth Behavior in Alloy 718 (81-Mat-1) (A) **O 102**
Fatigue Crack Growth in Pressurized Water Reactor Feedwater Lines (81-PVP-2) (A) **Ag 79**
Fatigue Crack Initiation
NSF Awards Joint Research Grant (EN) **Ja 72**
Fatigue Damage
Evaluation of Dynamic Load Combination Fatigue Damage (81-PVP-20) (A) **Ag 80**
Fatigue Damage of the Locomotive Suspension Elements Under Random Loading (80-WA/DE-7) (A) **Ap 98**
Fatigue Design
Fatigue Design in Mining Size Reduction Equipment (81-PVP-9) (A) **Ag 79**
Fatigue Failure
A Case Study of the Use of Experimental Modal Analysis as a Problem Solving Technique (81-DET-31) (A) **O 103**
Fatigue Fracture
Presentation of Failure Analysis Data by the Fatigue Fracture Mechanics Diagram (81-PVP-11) (A) **Ag 80**
Fatigue Life
Springs: Troubleshooting and Failure Analysis (CB) **My 92**
Fatigue Limit
Fatigue Considerations for Sizing Machinery Components (81-DE-8) (A) **Ag 78**
Faubert, F. M. Steady-State Digital Computer Model for Supercritical Steam Generators (81-JPGC-Pwr-4) (A) **N 110**
Fauble, T. J. An Investigation of Small Break Loss-of-Coolant Phenomena in a Small Scale Nonnuclear Test Facility (80-WA/NE-2) (A) **Ja 96**
Faulkner, L. L. Prediction of Aircraft Interior Noise Using the Statistical Energy Analysis Method (81-DET-102) (A) **D 90**
Fault Monitoring
Using Microprocessors in Fault Monitoring of Aircraft Electronics (81-GT-138) (A) **Jl 86**
F-Chart Method
Evaluation of a Proposed Modification of the F-Chart Method to Include Collector Array Air Leakage (80-WA/Sol-12) (A) **Ap 93**
Feasibility Study
Feasibility Study for the Use of Geothermal Energy at a Leggs' Hosiery Plant in New Mexico (81-Pet-8) (A) **My 89**
Fechner, G. Wear and Operating Cost Reduction of Slurry Pumps by Means of Hydrodynamic Variable Speed Couplings (80-WA/MH-3) (A) **Ap 96**
Federal Actions
What is an EIS? (STV) **Mr 87**
Federal Aid
Effect of Reduced Federal Aid to Students (EN) **D 79**
Federal Budget
The Budget Blooms (WW) **My 74**
Federal Government
Technology Assessment: A Background Review (80-WA/Mgt-3) (A) **Ja 102**
Federal Grants
Law to Help Close the Patent Gap (NR) **Jl 70**
Feed Pumps
Hydraulic and Dynamic Instabilities in Feed Pumps in Large Fossil and Nuclear Applications in the U.S.A. (80-JPGC/Pwr-21) (A) **F 118**
Feedback Controllers
Design of Digital Feedforward/Preview Controllers for Processors With Predetermined Feedback Controllers (80-WA/DSC-2) (A) **Mr 114**
Feedrate
Reference-Pulse Circular Interpolators for CNC Systems (80-WA/Prod-7) (A) **My 82**
Feedwater Heaters
Shell-and-Tube Heat Exchanger Failures in Feedwater Heaters, Condensers, and Other Heat Exchangers (81-JPGC-Pwr-1) (A) **N 110**
Feedwater Lines
Fatigue Crack Growth in Pressurized Water Reactor Feedwater Lines (81-PVP-2) (A) **Ag 79**
3-D Finite Element Analysis for the Investigation of Feedwater Line Cracking in PWR Steam Generators (81-PVP-3) (A) **Ag 78**
Flow Model Test for the Investigation of Feedwater Line Cracking for PWR Steam Generators (81-PVP-4) (A) **Ag 79**
Fehring, T. H. *(editor)* Mechanical Engineering: A Century of Progress (CB) **Je 118**
Feifarek, M. J. The Inertial Pressure Concept (81-Pet-28) (A) **My 91**
Feldman, K. T., Jr. Experience with the Heating Plant Heat Recovery System at The University of New Mexico (80-WA/HT-16) (A) **Ap 104**
Fender, D. A. Condenser Provisions for On-Line Detection of Tube Sheet Inleakage (80-JPGC/Pwr-23) (A) **F 118**
Fenstermaker, R. In the Matter of Reading Matter (C) **D 57**
Fenton, D. L. Operational Characterization of the Solar-Thermal Power System Near Willard, N.M. (80-WA/Sol-39) (A) **Ap 95**
Feola, M. Error Analysis in Evaluating the Mechanical Efficiency of Reciprocating Internal Combustion Engines (81-DGP-10) (A) **My 88**
Fernandes, J. H. Alternative Energy Technologies and Their Impact on Performance Test Codes (80-WA/PTC-2) (A) **Ap 101**
Fernandez-Pello, A. C. A Unified Analysis of Concurrent Modes of Flame Spread (81-HT-10) (A) **O 94**
Ferrand, P. Theoretical Study of Flow Instabilities and Inlet Distortions in Axial Compressors (81-GT-211) (A) **Jl 90**
Ferritic Stainless Steel
The Development of Sea-Cure Condenser Tubing (Crucible SC-1) (81-JPGC-Pwr-3) (A) **N 111**
Ferrofluids
Theory of Lubrication With Ferrofluids: Application to Short Bearings (81-Lub-39) (A) **D 99**
Ferrous Material
Pressure Vessel Handbook, 5th Ed. (CB) **Ag 85**
Fertis, D. G. Engine Dynamic Analysis With General Nonlinear Finite-Element Codes—Part 1: Overall Approach and Development of Bearing Damper Element (81-GT-151) (A) **Jl 85**
Ferziger, J. H. A Prediction Method for Planar Diffuser Flows (81-FE-5) (A) **Ag 83**
Fiber Optic Cables
Fiber Optic Cables in the Ocean Environment (80-

WA/OCE-6) (A) Mr 118

Fiber Optics
Optic Fiber Screwdriver (IF) Mr 77

Fiber Physics
ASME and Japanese Society to Co-Host '81 Textile Conference (NR) S 68

Fiberglas Fabrics
Development of Multi-Bar Weft-Insert Warp Knit Glass Fabrics for Industrial Applications (80-Tex-7) (A) F 123

Fiberglass Collectors
Modeling and Analysis of an All-Fiberglass Flat Plate Solar Collector (80-WA/Sol-4) (A) Ap 92

Fiberscopes
Fiber Optic Probes Monitor Engine Condition Ja 37

Fibrous Insulations
Radiative Heat Transfer in Fibrous Insulations—Part I: Analytical Study (81-HT-42) (A) O 96; Part II: Experimental Study (81-HT-43) (A) O 97

Fibrous Media
An Analytical and Experimental Investigation of the Heat Transfer Mechanisms within Fibrous Media Exposed to Solar Radiation (81-HT-41) (A) O 96

Fichter, E. F. Equations for Four-Bar Line-Envelopes (80-DET-40) (A) F 121

Field, D. A. A Quick Method for Testing if a Second Degree Polynomial Has Solutions in a Given Box (81-DET-118) (A) N 108

Field Conditions
The Design and Operation of Physical-Thermal Models (81-FE-16) (A) S 82

Field Data
Comparisons of Surface-Renewal Predictions with Field Data (80-WA/HT-67) (A) My 85

Field Experiments
Analysis of JP-4 Fire Test Data and Development of a Simple Fire Model (81-HT-17) (A) O 94

Field Forces
Analytical and Experimental Investigation of Magnetic Support Systems. Part I: Analysis (81-Lub-31) (A) D 98; Part II: Experimental Investigation (81-Lub-32) (A) D 98

Field Tests
Railway Freight Car Field Tests (80-WA/DSC-7) (A) Mr 115

Fighter Aircraft
Closed Loop Environmental Control Systems for Fighter Aircraft (81-ENAs-2) (A) S 86

Filament Webs
The Initial Modulus of Filament Webs (80-Tex-6) (A) F 123

Filippi, F. Decision Making Support in the Assessment of Modular Radiator Systems (80-ENAs-11) (A) Mr 111

Film Breakup
Dynamic Analysis of Rupture in Thin Fluid Films. 1—A Noninertial Theory (81-Lub-24) (A) D 98

Film Cavitation
A Rapid Determination of Journal Bearing Characteristics Under Combined Loading (80-DET-62) (A) Mr 107

Film Cooling
Experimental Determination of Transition Reynolds Number for Unsteady Film Cooling (81-GT-94) (A) Je 111
The Influence of a Laminar Boundary Layer and Laminar Injection on Film Cooling Performance (81-HT-38) (A) O 96
Studies of Full-Coverage Film Cooling Part 1: Cooling Effectiveness of Thermally Conductive Wall (81-GT-37) (A) Je 107; Part 2: Measurement of Local Heat Transfer Coefficient (81-GT-38) (A) Je 106

Film Formation
Film Formation and Flow Characteristics at the Inlet of a Starved Contact—Theoretical Study (81-Lub-22) (A) D 98

Film Shapes
Hydrodynamic Lubrication of Finite Slider Bearings: Effect of Film Shape, and Their Computer Aided Optimum Designs (81-Lub-40) (A) D 99

Film Thickness
The Effects of Artificially-Produced Defects on the Film Thickness Distribution in Sliding EHD Point Contacts (81-Lub-46) (A) D 98

Filters
Cleaning Up Diesel Exhaust (ES) Je 25

Filtration
Effects of Ultra-Clean and Centrifugal Filtration on Rolling-Element Bearing Life (81-Lub-35) (A) D 97

Finch, R. D. A Yard Test of Acoustic Signature Inspection of Railroad Wheels (80-WA/RT-2) (A) F 125

Finckh, H. H. Combined Gas and Steam Cycle for a Gas-Cooled Solar Tower Power Plant (81-GT-102) (A) Je 112

Findley, W. N. Creep of 2618 Aluminum Under Side-Steps of Tension and Torsion and Stress Reversal Predicted by a Viscous-Viscoelastic Model (81-APM-8) (A) S 84; Creep and Creep Recovery of 304 Stainless Steel Under Combined Stress With a Representation by a Viscous-Viscoelastic Model (80-WA/APM-10) (A) Ja 100

Fine Particles
A Theory for Fine Particle Deposition in 2-D Boundary Layer Flows and Application to Gas Turbines (81-GT-54) (A) Je 108

Finet, A. A Closer Look at Gravimetric Feeder Design Using Load Cells (80-JPGC/Pwr-13) (A) F 117

Finite Cloud Geometry
11.5 Micron Emission from Smoke Computed Using Finite Cloud Geometry (80-WA/HT-1) (A) Ap 103

Finite Disk
Rotating Compressible Flow Over the Edge of a Finite Disk (81-APM-19) (A) S 84

Finite Element Analysis
1981 Design Technical Conferences (NR) N 84

Finite Element Embedding
Finite Element Embedding with Optical Interference (81-HT-65) (A) O 97

Finite Element Model
Development of a Correlated Finite Element Dynamic Model of a Complete Aero Engine (81-DET-74) (A) O 104
Linear-Nonlinear Interface for Finite Element Impact Analysis (81-GT-39) (A) Je 106

Finite Elements
New Finite Elements for Quasi-Static Deformations and Stresses in Mechanisms (80-WA/DSC-35) (A) Mr 117

Finlayson, A. N. Making Windpower an Important Part of a National Energy Plan (81-Pet-11) (A) My 89

Fiorentino, A. J. Low Emissions Silo Combustor (81-GT-46) (A) Je 107

Fire Plumes
An Experiment and Model of a Fire Plume Rising from a Burning Heat Source of Finite Size (81-HT-5) (A) S 89

Firearms
Thoughts on Freedom (C) Ja 49

Firefighters
Firefighters Integrated Response Equipment System, Phase II (81-ENAs-42) (A) O 101

Fires
Analysis of JP-4 Fire Test Data and Development of a Simple Fire Model (81-HT-17) (A) O 94
The Calculation of Fire in a Large Building (81-HT-2) (A) S 88
Fires in Electrostatic Precipitators—Survey Results, Discussion and Recommendations (81-JPGC-APC-1) (A) D 100
Release Rate Model for Developing Fires (81-HT-4) (A) S 88
Variable Elimination in the Home Fire Code (81-HT-3) (A) S 88

Fireside Deposits
Experience with In-Service Water Cleaning of Boiler Fireside Deposits (80-JPGC/Fu-6) (A) Ja 99

Firla, A. P. Control Systems for CANDU PHW Reactors: Review of Design Philosophy and Principles of Control (80-WA/DSC-16) (A) Mr 115

Firmage, A. D. *(author)* Modern Engineering Practice: Ethical, Professional, and Legal Aspects (CB) F 128

First Stage Shell Pressure
Determining Turbine Throttle Flow from Measured First Stage Shell Pressure—A Critical Assessment (81-JPGC-Pwr-17) (A) N 112

Fisher, D. G. Application of Adaptive Control to a Computer Controlled Process (80-WA/DSC-40) (A) Mr 117

Fisher, D. K. Mirror Fusion—Another Path to Fusion Power Jl 24

Fisher, F. G. Progress in Railway Mechanical Engineering (1979–1980 Report of Survey Committee)—Cars and Equipment (80-WA/RT-11) (A) F 126

Fitzgerald, G. W. A Comparative Study of the Lanchester Damper and the Segmented Slug Damper in Boring Bar Applications (81-DET-90) (A) O 105

Fivel, H. J. Thermal Performance of a Dielectric Stack Exposed to Pulsed Coherent Radiation (81-ENAs-14) (A) S 87

Fixed Joints
System Approach to the Thermal Behavior and Deformation of Machine Tool Structures in Response to the Effect of Fixed Joints (80-WA/Prod-14) (A) My 83

Flack, R. D. Comparison of the Unbalance Responses of Jeffcott Rotors with Shaft Bow and Shaft Runout (81-DET-47) (A) D 89

Flame Stability
The Influence of Premixed Combustion Flame Stabilizer Geometry on Flame Stability and Emissions (81-GT-26) (A) Je 106

Flames
A Unified Analysis of Concurrent Modes of Flame Spread (81-HT-10) (A) O 94

Flange Force
Analysis of Wheel Rail Force and Flange Force During Steady-State Curving of Rigid Trucks (81-RT-5) (A) Ag 76

Flange Loads
Flange Loads Measurements in a Cylindrical Roller Bearing (81-Lub-18) (A) D 97

Flannery, J. V. Thermal Design of Fluid Test Cell for Growth of Crystals in Space (80-ENAs-13) (A) Mr 111

Flapping Motion
The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-13) (A) My 86

Flash Evaporation
Putting Seawater to Work (ES) Ap 28

Flash Pyrolysis
Application of Coal Flash Pyrolysis to Industrial Power Generation (81-IPC-Fu-4) (A) D 101

Flash Vaporization
Premixing and Flash Vaporization in a Two-Stage Combustor (81-GT-41) (A) Je 106

Flashing Flows
A Nonequilibrium Vapor Generation Model for Flashing Flows (81-HT-84) (A) O 99

Flat Ducts
Analysis of Laminar Forced Convection Heat Transfer in the Entrance Region of a Flat Duct with Uniform Wall Temperature (81-HT-29) (A) O 95

Flatbeds
Electric Flatbed Vehicle (IF) Ja 66

Flat-Plate Collectors
Analytical Predictions of Liquid and Air Photovoltaic/Thermal Flat-Plate Collector Performance (80-WA/Sol-3) (A) Ap 92
Design and Evaluation of a Computer Controlled Solar Collector Simulator (80-WA/Sol-6) (A) Ap 92
Solar-Assisted Space Heating System (IF) Ag 51
Sun Heats Italian Tannery (IF) Ag 51

Flat-Plate Solar Collectors
Solar Collectors for All Seasons (BTR) S 51

Flat Plates
Modeling and Analysis of an All-Fiberglass Flat Plate Solar Collector (80-WA/Sol-4) (A) Ap 92

Flawed Technology
Reinventing the Wheel: The Failure to Utilize Existing Technology Mr 54

Flaws
Flying Flaw Detector (BTR) Jl 56

Fleischman, R. N. Industrial Noise Pollution—Part 3: The Practical Function of Acoustical Engineering S 42

Fleming, M. Materials Experiment Carrier Thermal Control Systems Study (81-ENAs-32) (A) O 100

Fletcher, L. S. Mechanical Engineering Education for the 80s Ag 30

Fleury, J. Ammonia Bottoming Cycle Development at Electricité de France for Nuclear Power Plants (81-GT-178) (A) Jl 88

Flexibility
Locally and Nonlocally Reacting Flexible Porous Layers; A Comparison of Acoustical Properties (80-WA/NC-14) (A) **F 124**
Flexible Components
The Finite Element Analysis of Flexible Components of Mechanical Systems Using a Mixed Variational Principle (80-DET-64) (A) **Mr 107**
Flexible Elements
Synthesis of Two-Degree-of-Freedom Mechanism with Pulse Loading (80-DET-82) (A) **Mr 108**
Flexible Follower
On the Periodic Response of Cam Mechanism with Flexible Follower and Camshaft (80-WA/DSC-33) (A) **Mr 116**
Flexible Forecasting System
Commercial Engine Logistics Cost Projections—A Dynamic and Flexible Approach (81-GT-114) (A) **Je 113**
Flexible Links
The Application of Finite Element Methods to the Dynamic Analysis of Flexible Spatial and Co-Planar Linkage Systems (80-DET-87) (A) **Mr 108**
Flexible Manipulator Arms
A Comparison of Natural Frequency Prediction Methods for Flexible Manipulator Arms (80-WA/DSC-19) (A) **Mr 116**
Flexible Mechanical Systems
A Variational Formulation for the Finite Element Analysis of High-Speed Machinery (80-WA/DSC-38) (A) **Mr 117**
Flexible Radiator Systems
Thermal Vacuum Testing of Flexible Radiator Systems (81-ENAs-46) (A) **S 88**
Flexible Rotor Systems
Iterative Determination of Squeeze Film Damper Eccentricity for Flexible Rotor Systems (81-DET-87) (A) **D 90**
Flexible Rotors
Balancing of Flexible Rotors by the Complex Modal Method (81-DET-46) (A) **D 89**
Optimum Friction Damping of a Flexible Rotor (81-GT-156) (A) **Jl 86**
Flexible Slender Cylinders
Parametric Resonance Oscillations of Flexible Slender Cylinders in Harmonically Perturbed Axial Flow—Part 1: Theory (80-WA/APM-30) (A) **Ja 101**; Part 2: Experiments (80-WA/APM-31) (A) **Ja 102**
Flexible Systems
Vibration Analysis of a Flexible System Mounted on a Viscoelastic Sandwich Beam (81-DET-64) (A) **N 106**
Flight Experiments
Life Sciences Experiments for Dedicated Spacelab Missions (80-ENAs-37) (A) **Mr 113**
Flight Heat Transfer
In-Situ Calibration of Flight Heat Transfer Instrumentation (81-ENAs-13) (A) **S 86**
Flight Loads
Effect of Time-Dependent Flight Loads on Turbofan Engine Performance Deterioration (81-GT-203) (A) **Jl 90**
Flight Research Vehicles
The Role of Flight Research Vehicles in Prop-Fan Technology Development (81-GT-216) (A) **Jl 91**
Floating Ring Bearings
Dynamics of Rotor Bearing Systems Supported by Floating Ring Bearings (81-Lub-37) (A) **D 98**
Floquet Theory
An Application of the Poincare Map to the Stability of Nonlinear Normal Modes (80-WA/APM-4) (A) **Ja 99**
Flora, J. H. Computer Intelligence Design for Automatic Inspection of Steam Generator Tubes (81-NE-2) (A) **S 81**
Florschuetz, L. W. Laminar Wavy-Film Flow: Part I—Hydrodynamic Analysis (81-HT-13) (A) **O 94**; Part II—Condensation and Evaporation (81-HT-14) (A) **S 89**; Streamwise Flow and Heat Transfer Distributions for Jet Array Impingement with Crossflow (81-GT-77) (A) **Je 110**
Flow
Analysis and Identification of Subsynchronous Vibration for a High Pressure Parallel Flow Centrifugal Compressor (81-DET-57) (A) **N 105**
Cooling Air Flow Characteristics in Gas Turbine Components (81-GT-76) (A) **Je 110**
Design Concepts and Equipment Selection Processes for Northern Compressor Stations (81-GT-131) (A) **Jl 84**
Drawing of Tubes (80-WA/APM-17) (A) **Ja 100**
The Effect of Approach Flow Direction on the Flow Induced Vibrations of a Triangular Tube Array (81-DET-25) (A) **N 105**
The Effect of Inertia on Flow Between Misaligned Rotating Disks (80-WA/FE-2) (A) **My 85**
Effects of Camber Variation on Performance Characteristics of a High Specific Speed Propeller Pump (81-FE-26) (A) **S 82**
Effects of Vaneless Diffuser Geometry on Flow Instability in Centrifugal Compression Systems (81-GT-10) (A) **Je 104**
Evaluation of a Helical Flow Recuperator (81-HT-25) (A) **O 95**
Experimental Studies on the Flow Within the Side Recesses of a Centrifugal Pump Impeller and Casing (80-WA/Fu-7) (A) **F 127**; (80-WA/FE-7) (A) **My 86**
Film Formation and Flow Characteristics at the Inlet of a Starved Contact—Theoretical Study (81-Lub-22) (A) **D 98**
Flow-Induced Tube Vibration Tests of Typical Industrial Heat Exchanger Configurations (81-DET-37) (A) **O 104**
Flow Instability Due to a Diameter Reduction of Limited Length in a Long Annular Passage (81-DET-26) (A) **N 104**
The Flow of a Non-Newtonian Fluid Past Projections and Depressions (80-WA/APM-8) (A) **Ja 100**
Flow Prediction in Rotating Ducts Using Coriolis-Modified Turbulence Models (80-WA/FE-1) (A) **My 85**
Flow and Pressure Heat at the Inlet of Narrow Passages, Without Upstream Free Surface (81-Lub-41) (A) **D 99**
Flow Symposium in St. Louis (NR) **Mr 79**
Flow Through Axially Aligned Sequential Apertures of the Orifice and Borda Types (81-HT-79) (A) **O 99**
Flow Transition Phenomena and Heat Transfer Over the Pressure Surfaces of Gas Turbine Blades (81-GT-107) (A) **Je 112**
Full Potential Solution of Transonic Quasi-3-D Flow Through a Cascade Using Artificial Compressibility (81-GT-70) (A) **Je 109**
Heat Transfer Augmentation in Rod Bundles Near Grid Spacers (80-WA/HT-62) (A) **My 84**
Heat Transfer of Fully Developed Flow in Curved Tubes (81-HT-39) (A) **O 96**
The Influence of Swirl on the Flow Characteristics of a Reciprocating Piston-Cylinder Assembly (80-WA/FE-8) (A) **My 86**
An Integral Analysis for Incompressible Turbulent Thermal Boundary Layer Flow: Nonuniform Wall Heating (80-WA/HT-57) (A) **My 84**
Inverse or Design Calculations for Non-Potential Flow in Turbomachinery Blade Passages (81-GT-78) (A) **Je 110**
Laminar Wavy-Film Flow: Part 1—Hydrodynamic Analysis (81-HT-13) (A) **O 94**
LDA Measurement of Droplet Behavior Across Tie Plate During Dispersed Flow Portion of LOCA Reflood (80-WA/NE-4) (A) **Ja 96**
Mixed Convection in a Wall Plume (81-HT-37) (A) **O 96**
Potential Flow Solution for Two Obliquely Impinging Two-Dimensional Plane Jets of Different Stagnation Pressures (81-FE-18) (A) **S 81**
The Prediction of the Flow and Heat Transfer in the Vicinity of a Jet in Crossflow (80-WA/HT-26) (A) **Ap 105**
A Prediction Method for Planar Diffuser Flows (81-FE-5) (A) **Ag 83**
Rotating Compressible Flow Over the Edge of a Finite Disk (81-APM-19) (A) **S 84**
Scale Effects in the Dynamic Transfer Functions for Cavitating Inducers (80-WA/HT-51) (A) **Ap 107**
Solution of Plane Cascade Flow Using Improved Surface Singularity Methods (81-GT-169) (A) **Jl 87**
Spanwise Mixing in Axial-Flow Turbomachines (81-GT-57) (A) **Je 109**
A Study on Centrifugal Impeller and Diffuser Flow (81-GT-9) (A) **Je 104**
Transition From a Turbulent Jet into a Turbulent Plume (81-FE-29) (A) **S 82**
Universal Similarity in the Wakes of Stationary and Vibrating Bluff Structures (80-WA/FE-4) (A) **My 85**
A Waste Energy Power Generation Concept—The Plumemill (80-JPGC/Pwr-9) (A) **F 116**
Flow Branches
Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) (A) **Ag 82**
Flow Control Technology
Second International Symposium on Flow, preview (NR) **Mr 79**
Flow Distortions
Measurement of the Influence of Flow Distortions on the Blade Vibration Amplitude in an Air Turbine (81-DET-135) (A) **D 91**
Flow Fields
Application of Zone-Matching Methodology to Interacting Submerged Multiport Diffusers (81-FE-12) (A) **Ag 83**
Computation of Three-Dimensional Flow Fields Through Rotating Blade Rows and Comparison with Experiment (81-GT-121) (A) **Je 114**
Data Analysis and Analytical Predictions of a Steam Generator Tube Bundle Flow Field for Verification of 2-D T/H Computer Code (81-JPGC-NE-1) (A) **N 109**
Numerical Computation of Swirling Gas-Particle Flows: Application to Pulverized Coal Classifiers (80-WA/HT-31) (A) **Ap 105**
Predicting Trajectories and Concentrations of Particles in a Grinding Booth (81-FE-23) (A) **S 82**
Similarity Law of Transonic Flow Fields Around Cascades (81-GT-36) (A) **Je 107**
Flow Instabilities
Theoretical Study of Flow Instabilities and Inlet Distortions in Axial Compressors (81-GT-211) (A) **Jl 90**
Flow Maldistribution
The Effect of Flow Maldistribution on the Thermal Response of Packed-Bed Converters and Thermal-Energy Storage Units (81-HT-59) (A) **O 98**
Flow Measurements
The ISO-ASME Orifice Coefficient Equation **Jl 44**
Flow Oscillations
Improvement in Performance and Availability of Currently Operating MSR's (80-JPGC/Pwr-12) (A) **F 117**
Flow Patterns
An Application of the Optical Correlation Computer to the Detection of the Malkus Transitions in Free Convection (80-WA/HT-27) (A) **Ap 105**
Flow Rate
Calculation of the Theoretical Critical Flow Rate of Saturated Steam (80-WA/PTC-3) (A) **Ap 101**
A Comparison of Two Alternative Methods for Defining Fan Performance (80-WA/PTC-1) (A) **Ap 101**
Flow Structure
Visualization of the Flow Structure at the Free Interface of Two Counter-Flowing Streams (80-WA/FE-11) (A) **My 86**
Flowing Gas Stream
The Preparation of Calcium Superoxide in a Flowing Gas Stream and Fluidized Bed (80-ENAs-18) (A) **Mr 111**
Fluctuating Pressures
Analytical Prediction of Aerospace Vehicle Vibration Environments (81-DET-29) (A) **O 103**
Flue Gas
Experience with the Heating Plant Heat Recovery System at The University of New Mexico (80-WA/HT-16) (A) **Ap 104**
Flue Gas Desulfurization
Considerations in Evaluating Wet and Dry FGD Systems (81-JPGC-Pwr-5) (A) **N 110**
Flue Gas Treatment
Exxon Thermal DeNO$_x$ Process for Utility Boiler Applications (81-JPGC-Fu-9) (A) **D 94**
Fluid
The Prediction of the Flow and Heat Transfer in the Vicinity of a Jet in Crossflow (80-WA/HT-26) (A) **Ap 105**
Fluid Annuli
Freed Pump Vibration Research—Interstage Fluid Annuli (80-JPGC/Pwr-20) (A) **F 117**
Fluid Catalytic Cracking Plants
Design of Turbo Machine Set for Fluid Catalytic Cracking Plant and its Shop-Testing Under Full-

Load Conditions (81-GT-101) (A) **Je 112**

Fluid Control Systems
Frequency Response Analysis of Fluid Control Systems for Parabolic-Trough Solar Collectors (80-WA/Sol-15) (A) **Ap 93**

Fluid Dynamics
Fluid Dynamics Problem Solved (BTR) **Jl 52**

Fluid Film Forces
Instability of Rotors in Fluid Film Bearings (81-DE-6) (A) **Ag 78**

Fluid Films
Dynamic Analysis of Rupture in Thin Fluid Films. 1—A Noninertial Theory (81-Lub-24) (A) **D 98**

Fluid Flow
An Equivalent Continuum Model for Fluid Flow; Heat and Mass Transport in Geologic Materials (81-HT-54) (A) **O 96**

Fluid-Force Coefficients
Instability Mechanisms and Stability Criteria of a Group of Circular Cylinders Subjected to Cross-Flow—Part 1: Theory (81-DET-21) (A) **N 104**; Part II: Numerical Results and Discussions (81-DET-22) (A) **N 105**

Fluid Line Components
Maintainable Maintenance Disconnect Valve (MMDV) for On-Orbit Component Replacement (80-ENAs-42) (A) **Mr 114**

Fluid Loops
Simulation of the Transport Time Delay in Fluid Loops by Means of a Corrective Heat Flux (80-ENAs-22) (A) **Mr 112**

Fluid Lubricants
Slip Measurement in an Angular Contact Ball Bearing (81-Lub-33) (A) **D 98**

Fluid Mass
Small-Scale Observations of Wind Effects Penetration in the Open Sea (80-WA/HT-66) (A) **My 85**

Fluid Mechanics
Heat Transfer in Developing MHD Channel Flows in an Inclined Magnetic Field (80-WA/HT-12) (A) **Ap 104**
Joint ASME/ASCE Mechanics Conference, review (NR) **S 62**

Fluid Resonator
Fluid-Resonator Response to Hydrodynamic Pressure Oscillations (80-WA/NC-7) (A) **F 124**

Fluid Test Cell
Thermal Design of Fluid Test Cell for Growth of Crystals in Space (80-ENAs-13) (A) **Mr 111**

Fluid Transient
HTGR-GT Primary Coolant Transient Resulting from Postulated Turbine Deblading (81-GT-19) (A) **Je 105**

Fluidelastic Instability
Fluidelastic Instability of an Infinite Double Row of Circular Cylinders Subject to a Uniform Crossflow (81-DET-24) (A) **D 89**

Fluidized Bed
The AFBC Process (ES) **S 24**
The Preparation of Calcium Superoxide in a Flowing Gas Stream and Fluidized Bed (80-ENAs-18) (A) **Mr 111**

Fluidized Bed Combustion
A Blossoming Market (ES) **Je 25**
Industrial Fluidized Bed Steam Generation (81-IPC-Fu-2) (A) **D 101**

Fluidized-Bed Combustion Systems
Conceptual Design of a Coal Fired Utility Boiler for Cycling Duty (80-JPGC/Pwr-16) (A) **F 117**

Fluidized Bed Combustors
Erosion-Corrosion in the Multisolids Fluidized Bed Combustor, Part II: Burning Coal With Limestone in a 14 × 25-In. Unit with Integral Boiler (80-WA/CD-4) (A) **Ja 97**

Fluids
Digital Bispectral Analysis of Nonlinear Wave Couplings in Fluids (81-FE-32) (A) **S 83**
Dynamics of Coupled Fluid-Structure Multiplate Systems (81-DET-145) (A) **D 91**
Recording Fluid Currents by Holography (BTR) **Ja 53**
Theoretical Effects of Rigid Particle Additives in Noncyclic Squeeze Films (81-Lub-26) (A) **D 97**

Fluids Engineering
An Ad-Hoc Method for Convection Dominated Flows (81-FE-15) (A) **S 82**
Analysis of the Roughness Function and Wall Law Slope for Rough Surface Turbulent Boundary Layers (81-FE-36) (A) **S 83**
Analytical Model of the Round Buoyant Jet (81-FE-10) (A) **S 81**
The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-13) (A) **My 86**
Application of Zone-Matching Methodology to Interacting Submerged Multiport Diffusers (81-FE-12) (A) **Ag 83**
The Block-Lift in Axial Piston Hydraulic Motors (81-FE-25) (A) **S 82**
Computer Prediction of Local Destratification Near Low-Level Release Structures of Reservoirs (81-FE-11) (A) **S 81**
Deposition of Suspensions in Turbulent Flow Over a Tilted Flat Plate (81-FE-28) (A) **S 82**
The Design and Operation of Physical-Thermal Models (81-FE-16) (A) **S 82**
Developing Region of Laminar Jets With Parabolic Exit Velocity Profiles (81-FE-3) (A) **Ag 82**
Digital Bispectral Analysis of Nonlinear Wave Couplings in Fluids (81-FE-32) (A) **S 83**
Drag-Characterization Method for Arbitrarily Rough Surfaces by Means by Rotating Disks (81-FE-33) (A) **S 83**
Draining of Tanks with Submerged Outlets or Without Vacuum-Relief (81-FE-21) (A) **S 82**
The Effect of Froude Number on Entrainment in Two-Dimensional Line Plumes (81-FE-6) (A) **Ag 83**
The Effect of Gravity on Certain Curved Channel Potential Flows (81-FE-19) (A) **S 82**
The Effect of Inertia on Flow Between Misaligned Rotating Disks (80-WA/FE-2) (A) **My 85**
The Effects of Bed Friction on Lateral Mixing in Open Channel Flow (81-FE-9) (A) **S 81**
Effects of Camber Variation on Performance Characteristics of a High Specific Speed Propeller Pump (81-FE-26) (A) **S 82**
Effects of Free-Stream Turbulence on Diffuser Performance (81-FE-4) (A) **Ag 83**
Effects of Nozzle Exit Turbulence on the Spreading (or Widening) Rate of Plane Free Jets (81-FE-22) (A) **S 82**
The Effects of Roughness and Shear on Vortex Shedding Cell Lengths Behind a Circular Cylinder (81-FE-24) (A) **S 82**
Experimental Studies on the Flow Within the Side Recesses of a Centrifugal Pump Impeller and Casing (80-WA/FE-7) (A) **My 86**
Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) (A) **Ag 82**
Flow Prediction in Rotating Ducts Using Coriolis-Modified Turbulence Models (80-WA/FE-1) (A) **My 85**
The Influence of Swirl on the Flow Characteristics of a Reciprocating Piston-Cylinder Assembly (80-WA/FE-8) (A) **My 86**
Kinematic and Dimensional Arguments on Derivative Skewness in Turbulent Shear Flows (81-FE-30) (A) **S 82**
Mixing and Dilution of Water Soluble Hazardous Chemicals Released in Navigable Rivers (81-FE-17) (A) **S 81**
Multiple-Scale Turbulence Modeling of Free Turbulent Flows (81-FE-20) (A) **S 82**
On Wind-Tunnel Simulation of Desert Atmospheric Conditions for Sand Dune Studies (81-FE-8) (A) **Ag 83**
Optimum Strut-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) (A) **Ag 83**
Potential Flow Solution for Two Obliquely Impinging Two-Dimensional Plane Jets of Different Stagnation Pressures (81-FE-18) (A) **S 81**
Predicting Trajectories and Concentrations of Particles in a Grinding Booth (81-FE-23) (A) **S 82**
A Prediction Method for Planar Diffuser Flows (81-FE-5) (A) **Ag 83**
Reynolds Number and Ambient Turbulence Effects on the Nearfield Mean Characteristics of a Laboratory Model Thermal Plume (81-FE-7) (A) **S 81**
Rotational Inviscid Flow in a Variable Area Annulus, Pipe or Channel (80-WA/FE-14) (A) **My 86**
Roughness Characteristics of Plane Surfaces Based on Velocity Similarity Laws (81-FE-34) (A) **S 83**
A Round Jet Normal to a Cross-Flow (80-WA/FE-10) (A) **My 86**
Safety Relief Valve Discharge Downcomer Transients for a BWR (81-FE-27) (A) **S 82**
Some Anomalies in the Boundary Layer and Friction Drag Characteristics of Streamwise Corrugated Walls at Transonic and Supersonic Freestream Velocities (81-FE-37) (A) **S 83**
A Study of Separated Flow Patterns in Front of Buildings and Bodies Facing the Wind with Their Sharp Edge (81-FE-14) (A) **S 81**
Supercavitating Cavity Observations by Means of Laser Velocimeter (80-WA/FE-5) (A) **My 85**
Theoretical Investigation of the Decay of Scalar Variance Injected into Homogeneous Turbulence (81-FE-31) (A) **S 83**
Theoretical Prediction of Onset of Horizontal Slug Flow (80-WA/FE-6) (A) **My 85**
A Theoretical Study on Air Bubble Motion in a Centrifugal Pump Impeller (80-WA/FE-3) (A) **My 85**
Transition From a Turbulent Jet into a Turbulent Plume (81-FE-29) (A) **S 82**
Turbulence Structure and Skin Friction in Turbulent Boundary Layers on Irregularly Rough Surfaces (81-FE-35) (A) **S 83**
Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (80-WA/FE-9) (A) **My 86**
Turbulent Wakes in Shallow Waters (81-FE-13) (A) **S 81**
Two-Dimensional Turbulent Offset Jet-Boundary Interaction (80-WA/FE-12) (A) **My 85**
Universal Similarity in the Wakes of Stationary and Vibrating Bluff Structures (80-WA/FE-4) (A) **My 85**
Visualization of the Flow Structure at the Free Interface of Two Counter-Flowing Streams (80-WA/FE-11) (A) **My 86**

Flutter
The Effect of Bending-Torsion Coupling on Fan and Compressor Blade Flutter (81-GT-163) (A) **Jl 87**

Flux-Corrected Transport
An Ad-Hoc Method for Convection Dominated Flows (81-FE-15) (A) **S 82**

Fluxes
Analytical and Experimental Investigation of Magnetic Support Systems. Part I: Analysis (81-Lub-31) (A) **D 98**; Part II: Experimental Investigation (81-Lub-32) (A) **D 98**
Comparison of Profiles and Fluxes of Heat and Momentum Above and Below an Air-Water Interface (80-WA/HT-68) (A) **Ap 107**

Fly Ash
Fly Ash Removes SO_2 (BTR) **F 56**
Predicting the Effect of Fly Ash Resistivity Modification on Precipitator Collection Efficiency (81-JPGC-Fu-3) (A) **D 93**

Fly-Ash Polydispersions
Predictions of Radiative Properties of Pulverized Coal and Fly-Ash Polydispersions (81-HT-24) (A) **O 94**

Fly-Shuttle Loom
Analysis of Fly-Shuttle Loom Noise by Multi-Channel Digital Signal Processing Techniques (81-DET-100) (A) **N 106**

Flywheel System
Solar Technologies Moving into 'Orbit' (NR) **O 68**

Flywheels
Parametric Design Analysis of a Hybrid Composite Flywheel Using a Laminated Central Disc and a Filament Wound Outer Ring (80-DET-97) (A) **Mr 110**

Foil Journal Bearings
Development of Foil Journal Bearings for High Load Capacity and High Speed Whirl Stability (81-Lub-36) (A) **D 98**

Follower Systems
Matrix Methods in Plate Cam Geometry (80-DET-111) (A) **Mr 110**

Folsom, B. A. Bench Scale Testing of Low-NO_x LBG Combustors (81-GT-59) (A) **Je 109**

Food Regeneration
Unconventional Processes for Food Regeneration in Space: An Overview (81-ENAs-35) (A) **S 87**

Footnote
A Thousand Pardons (C) **Je 62**

Force
A Mass is a Mass is a Mass. . . (C) **S 48**
A Matter of Metrics (C) **My 42**

Metric Meditations (C) **Ag 42**
Fore Balancing Machines
A New Concept for Force Balancing Machines for Planar Linkages—Part I: Theory (80-DET-73) (A) **Mr 106**; Part II: Application to Four-Bar Linkage and Experiment (80-DET-74) (A) **Mr 108**
Force Distribution
Control of Force Distribution in Robotic Mechanisms Containing Closed Kinematic Chains (80-WA/DSC-32) (A) **Mr 116**
Force System
An Interactive Computer Program for Force System Structural and Dimensional Synthesis (80-DET-61) (A) **Mr 107**
Forced Convection
Low Reynolds Number Forced Convection Steam Cooling Heat Transfer in Rod Bundles (80-WA/HT-59) (A) **My 84**
Forced Convective Effects
Free and Forced Convective Effects on Air-Permeable Insulation Systems (81-HT-47) (A) **O 97**
Forced Convective Problems
Forced Convective Post-CHF Heat Transfer and Quenching (80-WA/HT-69) (A) **My 85**
Forced Flow Cooling
Forced Flow Cooling of a Volumetrically Heated Porous Layer (81-HT-46) (A) **O 97**
Forced Vibrations
Experiments on Chaotic Motions of a Forced Nonlinear Oscillator: Strange Attractors (80-WA/APM-2) (A) **Ja 99**
Forecasting Device
Maximum Demand Controller (IF) **Ja 66**
Foreign Competition
Surge in Machine Tool Imports (BTR) **F 56**
Foreign Oil Shale
Moroccan Shale, U.S. Technology (ES) **Jl 18**
Forest, T. W. The Adhesion of Ice to Low Energy Solids (80-WA/HT-19) (A) **Ap 104**
Forged Bucket Development
Water-Cooled Gas Turbine Forged Bucket Development (81-GT-174) (A) **Jl 88**
Forging
Axisymmetric Upset Forging: A Semi-Empirical Approach (80-WA/Prod-21) (A) **My 83**
Forging Simulations and Properties Achievable for Large Waspaloy Forgings for Land-Based Gas Turbines (81-GT-84) (A) **Je 110**
Hot Forming Technological Advances (BTR) **Jl 55**
Upper Bound Analysis of Axisymmetric, Closed-Die Forgings (80-WA/Prod-1) (A) **My 84**
Forging Machines
Squeeze Film Die Support as a Means of Noise Reduction in Forging Machines (81-DET-97) (A) **D 90**
Forging Press
Two Goliaths with a Brain Surgeon's Touch—French Steam Hammer and American Forging Press (NR) **D 75**
Forklift Trucks
Wind: A Power Source for Forklift Trucks **Ja 30**
Fornes, R. E. Tensile Properties of Triaxially Woven Fabrics Under Biaxial Loading (80-Tex-3) (A) **F 122**
Forrestal, M. J. A Model to Estimate Forces on Conical Penetrators Into Dry Porous Rock (81-APM-15) (A) **S 84**
Fossil Energy
TRW Backs MHD (ES) **Jl 19**
Fossil Fuel Burning
Response of the Global Climate to Changes in Atmospheric Chemical Composition Due to Fossil Fuel Burning (80-WA/HT-3) (A) **Ap 103**
Fossil-Fuel-Fired Boilers
The Development and Design of Steam/Water Solar Receivers for Commercial Application (81-Sol-4) (A) **S 80**
Fossil Fuel Systems
Advanced Fossil Fuel Systems (ES) **S 24**
Fossil Fuels
An Economic Comparison of Wood and Fossil Fuel Processing Systems (80-WA/Ener-1) (A) **Ap 95**
Greenhouse Effect on Venus (BTR) **Ag 48**
In Situ Recovery of Shale Oil (BTR) **O 55**
A Solar Hybrid System (ES) **O 26**
Fossil Power Systems
Combustion: Fossil Power Systems (CB) **N 116**
Foundation Interaction
Fan/Foundation Interaction—A Simplified Calculation Procedure (80-JPGC/Pwr-10) (A) **F 117**
Foundational Equations
A Generalized Torsion Spring Design Method—A Further Refinement (80-DET-5) (A) **F 119**
Foundations
An Analysis of the Thermal Fixation of Pilings (80-WA/HT-6) (A) **Ap 103**
Founders of ASME
Praise for Profiles (C) **F 46**
Four-Bar Function Generators
Analytical Synthesis of Four-Bar Function Generators to Match Prescribed Differential Coefficients (80-DET-33) (A) **F 120**
Optimum Stochastic Synthesis of Four-Bar Spatial Function Generators (80-DET-32) (A) **F 120**
Four-Bar Linkage
A Classification of Coupler-Line Envelopes From Hinged Four-Bar Linkages (80-DET-42) (A) **F 121**
Dynamic Response of an Electric Motor-Linkage System During Startup (80-DET-54) (A) **Mr 106**
Equations for Four-Bar Line-Envelopes (80-DET-40) (A) **F 121**
A New Concept for Force Balancing Machines for Planar Linkages—Part I: Theory (80-DET-73) (A) **Mr 106**; Part II: Application to Four-Bar Linkage and Experiment (80-DET-74) (A) **Mr 108**
Synthesis of the Four-Bar Function Generator: A Novel Approach (80-DET-26) (A) **F 119**
Synthesis of Four-Bar Linkage for Position, Velocity and Acceleration Coordination by Geometric Programming (80-DET-80) (A) **Mr 108**
Four-Bar Mechanisms
Synthesis of Four-Bar Mechanism with Correlation Concept (80-DET-81) (A) **Mr 108**
Four-Link Mechanisms
3 MSP Synthesis of the RCCC Linkage: A Generalized Dual Number Approach (80-DET-99) (A) **Mr 109**
Fracture
Fatigue and Fracture Analysis of Two Turbine Shafts (81-PVP-27) (A) **Ag 81**
Transition From Brittle to Ductile Fracture for a Rapidly Propagating Crack (81-PVP-16) (A) **Ag 80**
Fracture Criteria
Fracture Criteria of Fibrous Laminated Composites Under In-Plane Multidirectional Loading (80-WA/APM-9) (A) **Ja 100**
Fracture Initiation
Dynamic Fracture Initiation in Metals and Preliminary Results on the Method of Caustics for Crack Propagation Measurements (81-PVP-15) (A) **Ag 80**
Fracture Instability
A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part I: J-Integral Analysis (80-WA/PVP-3) (A) **Ja 98**
Fracture Mechanics
Fracture Mechanics Model for Pittsburgh Coal (81-Pet-16) (A) **My 90**
Nondestructive Evaluation of the J and M Integrals (81-APM-2) (A) **S 83**
Significance of Centerline Lack-of-Penetration Defects in Double Seam-Welded SA-312 Pipe (81-PVP-33) (A) **Ag 81**
Specifying Linepipe Suitable for Safe Operation in Sour Wet Service (81-Pet-1) (A) **My 88**
Fragile Materials
Gentle Handling Methods for Fragile Particulate Bulk (80-WA/MH-1) (A) **Ap 96**
France, E. R. Flow Instability Due to a Diameter Reduction of Limited Length in a Long Annular Passage (81-DET-26) (A) **N 104**
Franceschi, J. The Process Computer: Frankenstein or Genie? **N 60**
Francis, E. J. Optimistic OTEC Outlook (C) **Je 62**
Frank, R. L. Acoustic Emission Monitoring of Steam Turbines (81-JPGC-Pwr-16) (A) **N 111**
Frankfort, K. A Market Research Effort Leading to the Development of a High-Efficiency 10,000-shp Gas Turbine System (81-GT-190) (A) **Jl 89**
Franklin, C. J. An Investigation of a Preswirled Cooling Airflow to a Turbine Disc by Measuring the Air Temperature in the Rotating Channels (81-GT-132) (A) **Jl 84**
Fraser, D. J. *(author)* Conceptual Designs and Preliminary Analysis of Structures (CB) **N 115**
Frechette, F. J. Fabrication of Injection Molded Sintered Alpha SiC Turbine Components (81-GT-161) (A) **Jl 86**
Free, J. C. Elements of an Optimization Software Library for Engineering Design (80-WA/DSC-41) (A) **Mr 117**
Free Convection
An Application of the Optical Correlation Computer to the Detection of the Malkus Transitions in Free Convection (80-WA/HT-27) (A) **Ap 105**
Experimental Free Convection from an Inclined Cylinder (80-WA/HT-29) (A) **Ap 105**
An Experimental Investigation of Free Convection About a Heated Inclined Surface in a Porous Medium (81-HT-85) (A) **O 99**
Frost Formation on Vertical Cylinders in Free Convection (80-WA/HT-22) (A) **Ap 104**
Free Convection Shield
Radiation and Free Convection Shield for Passive Thermal Control (80-WA/Sol-7) (A) **Ap 93**
Free Electron Lasers
Revolutionary Laser (BTR) **D 60**
Free Enterprise
Frree Enterprise and Energy (C) **Ja 49**
Free Interface
Visualization of the Flow Structure at the Free Interface of Two Counter-Flowing Streams (80-WA/FE-11) (A) **My 86**
Free Modes
Natural Frequencies of Rotating Bladed Discs Using Clamped-Free Blade Modes (81-DET-124) (A) **N 108**
Free-Stream Turbulence
Effects of Free-Stream Turbulence on Diffuser Performance (81-FE-4) (A) **Ag 83**
Free Turbulent Flows
Multiple-Scale Turbulence Modeling of Free Turbulent Flows (81-FE-20) (A) **S 82**
Freedom
The Illusion of Absolute Freedom (C) **Mr 65**
Thoughts on Freedom (C) **Ja 48**
Freelburn, H. R. Storm Over S-T View (C) **Ja 52**
Freeman, R. A. The Generalized Coordinate Selection for the Dynamics of Complex Planar Mechanical Systems (80-DET-85) (A) **Mr 108**
Freeze Conditioning
Use of Freeze Conditioning Agents and a Thawing Product on Coal (80-JPGC/Fu-5) (A) **Ja 98**
Freezing
Development and Operational Testing of a Heat Pipe Dry Cooling Tower (80-JPGC/Pwr-22) (A) **F 118**
The Effect of Solute Polarization on the Freezing and Thawing of Aqueous Solutions (80-WA/HT-21) (A) **Ap 104**
Freezing Potential Studies in Wet Clay Systems (80-WA/HT-8) (A) **Ap 103**
Freight Car Fleet
Train Brake and Track Capacity Requirements for the 80s (81-RT-11) (A) **Ag 76**
Freight Car Trucks
Dynamic Response of Freight Vehicle Systems—A Performance Characterization (81-RT-4) (A) **Ag 76**
Freight Cars
Laboratory Investigation of Wheel Rail Contact Stresses for U.S. Freight Cars (80-WA/RT-8) (A) **F 126**
Railway Freight Car Field Tests (80-WA/DSC-7) (A) **Mr 115**
Three Methods of Empty/Load Braking for Freight Cars (80-WA/RT-7) (A) **F 126**
Freight Equipment
ME Goes Full Steam Ahead (C) **O 50**
Freight Locomotives
The SD50 Locomotive (81-RT-2) (A) **Ag 77**
Frene, J. Film Formation and Flow Characteristics at the Inlet of a Starved Contact—Theoretical Study (81-Lub-22) (A) **D 98**
Freon
Gas-Filled Acoustic Lens (BTR) **Ap 63**
Frequency Control
Frequency Control with Closed-Cycle Gas Turbines in an Interconnected Electric Grid (80-WA/GT-5) (A) **Ap 102**
Frequency Domain Algorithm
Frequency-Domain Estimation of Linearized Oil-Film Coefficients (81-Lub-7) (A) **D 96**

Frequency Response
Improved Methods for the Fast Fourier Transform (FFT) Calculation of the Frequency Response Function (81-DET-8) (A) **D 88**
Freshwater Mussels
The Incredible Mussel (BTR) **Jl 51**
Fretting Corrosion
Virginia Tech Engineers to Study Fretting Corrosion (EN) **Mr 83**
Fretting Fatigue
Fretting Wear and Fretting Fatigue—How Are They Related? (81-Lub-13) (A) **D 97**
Fretting Wear
Fretting Wear and Fretting Fatigue—How Are They Related? (81-Lub-13) (A) **D 97**
Freudenstine, F. Optimum Balancing of Combined Pitching and Yawing Moments in High-Speed Machinery (80-DET-7) (A) **Mr 106**
Freund, L. B. Dynamic Fracture Initiation in Metals and Preliminary Results on the Method of Caustics for Crack Propagation Measurements (81-PVP-15) (A) **Ag 80**; Elections to Fellow Grade **Ja 95**
Frey, N. D. Long-Life Fatigue of Type 316 Stainless Steel of Temperatures Up to 593°C (81-Mat-2) (A) **O 102**
Freymuth, P. Kinematic and Dimensional Arguments on Derivative Skewness in Turbulent Shear Flows (81-FE-30) (A) **S 82**
Fricks, D. H. Application of Improved Technology to a Preprototype Vapor Compression Distillation (VCD) Water Recovery Subsystem (81-ENAs-10) (A) **S 86**
Friction
A Deep Drawing Test for Determining the Punch Coefficient of Friction (80-WA/Prod-10) (A) **My 82**
The Effects of Friction Between Cylinders and Rubber Staves of Finite Thickness (81-Lub-30) (A) **D 98**
Experimental Investigation of the Effect of System Rigidity on Wear and Friction-Induced Vibrations (81-Lub-3) (A) **D 95**
The Morphology of Surface Damage Caused by Friction (81-Lub-14) (A) **D 97**
Friction-Creep Study
"Super Series" Wheel Creep Control System (80-WA/RT-3) (A) **F 125**
Friction Damping
Combined Friction and Material Damping of Resonant Steam Turbine Blade Response (81-DET-136) (A) **D 92**
Optimum Friction Damping of a Flexible Rotor (81-GT-156) (A) **Jl 86**
Friction Drag
Some Anomalies in the Boundary Layer and Friction Drag Characteristics of Streamwise Corrugated Walls at Transonic and Supersonic Freestream Velocities (81-FE-37) (A) **S 83**
Friction Forces
Modeling of Nonholonomic Dynamic Systems With Applications (81-APM-12) (A) **S 84**
Friction Plate Clutch
New Friction Plate Clutch (IF) **N 83**
Frictional Forces
Interactions Between Dynamic Normal and Frictional Forces During Unlubricated Sliding (81-Lub-15) (A) **D 97**
The Measurement of Dynamic Normal and Frictional Contact Forces During Sliding (81-DET-40) (A) **O 104**
Turbulent Wakes in Shallow Waters (81-FE-13) (A) **S 81**
Frictional Interface
Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: P and SV Motion (81-APM-18) (A) **S 84**
Frictionless Devices
Device Helps Brain-Injured Children to Crawl (BTR) **D 53**
Friedman, M. A. Development of a Small-Scale Catalytic Gas Turbine Combustor (81-GT-43) (A) **Je 108**
Friedmann, P. P. The Effect of Bending-Torsion Coupling on Fan and Compressor Blade Flutter (81-GT-163) (A) **Jl 87**
Friefeld, J. M. Testing of the U.S. Solar Pilot Plant Receiver (81-Sol-3) (A) **S 80**
Friss, R. H. Railway Freight Car Field Tests (80-WA/DSC-7) (A) **Mr 115**
Frost
Frost Formation on Vertical Cylinders in Free Convection (80-WA/HT-22) (A) **Ap 104**
Frost Damage
Moisture Transfer in Concrete Pavements (81-HT-32) (A) **O 96**
Frost Heave
Freezing Potential Studies in Wet Clay Systems (80-WA/HT-8) (A) **Ap 103**
Froude Number
The Effect of Froude Number on Entrainment in Two-Dimensional Line Plumes (81-FE-6) (A) **Ag 83**
Frozen Arctic
Pondering Production Problems in the Deep Sea and Frozen Arctic (NR) **N 86**
Fryer, R. M. Operational Safety and Reliability Research at EBR-II (81-JPGC-NE-11) (A) **N 110**
Fryling, G. R. Editor, Retiring (C) **N 72**
Fu, Z. F. Determination of Vibration Amplitudes and Stresses Using the Holography Interference Techniques and Finite Element Method (81-DET-132) (A) **N 108**
Fuchizawa, H. Design Method to Improve the Performance of Two-Dimensional Motion Control (81-DET-120) (A) **N 108**
Fuchs, H. O. The Human Side of Engineering (C) **D 56**
Fuel
Burning Rates of Linear Fuel Droplet Arrays (80-WA/HT-34) (A) **Ap 105**
Doe's Fuel Use Regulations: A Cause for Concern **Jl 37**
An Economic Comparison of Wood and Fossil Fuel Processing Systems (80-WA/Ener-1) (A) **Ap 95**
Experiment with Diesohol (BTR) **Jl 51**
Fuel Emulsifier (IF) **My 55**
Fuel for Future Transport Aircraft (81-HT-80) (A) **O 99**
Hydrogen from Sunlight (ES) **My 19**
Impacts of Broadened-Specification Fuels on Aircraft Turbine Engine Combustors (81-GT-2) (A) **Je 104**
Liquid Hydrogen for Automotive Vehicles—Experimental Results (81-HT-83) (A) **O 99**
Liquid Hydrogen as a Vehicular Fuel: An Evaluation **My 24**
The Merits of Methanol (BTR) **Je 63**
Methanol—The Efficient Conversion of Valueless Fuels into a Versatile Fuel and Chemical Feedstock (81-PID-1) (A) **My 86**
Methanol from Solar Energy (IF) **Jl 61**
Slow-Speed Two-Stroke Diesel Engine Tests Using Coal-Based Fuels (81-DGP-12) (A) **My 88**
A Study of External Fuel Vaporization (81-GT-158) (A) **Jl 86**
Fuel Alcohol
Gasohol—The Replaceable Fuel Source (IF) **Ap 66**
Fuel Atomizing Device
A Development of the Fuel Atomizing Device Utilizing High Rotational Speed (81-GT-180) (A) **Jl 88**
Fuel-Bound Nitrogen
Effect of Water Injection for NO_x Reduction with Synthetic Liquid Fuels Containing High Fuel-Bound Nitrogen in a Gas Turbine Combustor (81-GT-51) (A) **Je 108**
Fuel Bundles
A Best Estimate Radiation Heat Transfer Model Developed for TRAC-BD1 (81-HT-66) (A) **O 98**
Fuel Cells
CO_2 Concentrations in a Molten Carbonate Electrochemical Cell (80-ENAs-14) (A) **Mr 111**
Novel Fuel Cell (IF) **N 83**
Fuel Consumption
'Brakes' of Driving Analyzed (BTR) **Ja 60**
Fuel-Saving Engine Kits (ES) **Je 25**
Fuel Conversion
Evaluation of the Impact on CGT Operation when Converting to Crude Oil Fuel (81-GT-207) (A) **Jl 89**
Fuel Economy
Analytical Consideration of Fuel Economy and Dynamic Response of a Regenerative High Temperature Automobile Gas Turbine—Part II (81-GT-218) (A) **Jl 91**
Fuel Effectiveness
Fuel Effectiveness of Cogeneration (80-JPGC/Pwr-8) (A) **F 116**
Fuel Efficiency
Trend to the Diesel (BTR) **Ja 62**
Fuel-Efficient Engines
OK to Fly (ES) **My 19**
Fuel Flexibility
Application of Water Cooling for Improved Gas Turbine Fuel Flexibility and Availability (81-GT-68) (A) **Je 109**
Design and Preliminary Results of a Fuel Flexible Industrial Gas Turbine Combustor (81-GT-108) (A) **Je 113**
Fuel Gas
Coal Gasification Milestone (ES) **Ap 29**
Controlled Combustion of a Varying Low-Btu Coal-Derived Gas (81-GT-134) (A) **Jl 85**
Fuel Injection Pump
New Fuel Injection Pump (IF) **Ap 66**
Fuel Injectors
The Design and Performance of a Sturdy Industrial Combustion Chamber for a 14-MW Gas Turbine (81-GT-48) (A) **Je 108**
Fuel Nozzles
Application of Airblast Atomizing Fuel Nozzles to Two Prototype Industrial Gas Turbines (81-GT-82) (A) **Je 110**
Fuel Oil
Alternative Fuels Study (IF) **Je 73**
High Energy, High Purity (ES) **My 19**
Fuel Properties
The Evaluation of Fuel Property Effects on Air Force Gas Turbine Engines—Program Genesis (81-GT-1) (A) **Je 104**
Fuel Reserves
McGraw-Hill Encyclopedia of Energy, 2nd Ed. (CB) **My 93**
Fuel Spray
Diagnostic Measurement of Fuel Spray Dispersion (80-WA/HT-35) (A) **Ap 105**
Fuel Systems
Hydrogen from Methanol Fuels Chevy (BTR) **O 56**
A LH2 Engine Fuel System on Board—Cold GH2 Injection into Two-Stroke Engine with LH2-Pump (81-HT-81) (A) **O 99**
Fuel Transfers
Control System for the Mainline Gas Turbine and Crude Oil Pumps on the Saudi Arabian Petroline (81-GT-33) (A) **Je 106**
Fuels
Application of Coal Flash Pyrolysis to Industrial Power Generation (81-IPC-Fu-4) (A) **D 101**
Chemically Induced Slagging to Improve Superheat/Reheat Temperature (80-JPGC/Fu-1) (A) **Ja 98**
Coal Ash Fouling Test in a Laboratory Furnace (81-JPGC-Fu-8) (A) **D 93**
Coordinated Sootblowing—A Station Approach (81-JPGC-Fu-7) (A) **D 93**
Development of a High-Solids, Coal-Water Mixture for Application as a Boiler Fuel (81-JPGC-Fu-4) (A) **D 93**
The Effects of a Volatile Fireside Manganese Additive on Coal-Fired Utility Boiler Operation (80-JPGC/Fu-4) (A) **Ja 98**
Evaluation of INCOCLAD 671/800H Tubing After Nine Years of Reheater Service in a Coal-Fired Utility Boiler (80-WA/Fu-6) (A) **F 127**
Experience with High Sodium Subbituminous Coals (80-WA/Fu-4) (A) **F 126**
Experience with In-Service Water Cleaning of Boiler Fireside Deposits (80-JPGC/Fu-6) (A) **Ja 99**
Experimental Studies on the Flow Within the Side Recesses of a Centrifugal Pump Impeller and Casing (80-WA/Fu-7) (A) **F 127**
Exxon Thermal $DeNO_x$ Process for Utility Boiler Applications (81-JPGC-Fu-9) (A) **D 94**
Flame Imprinted Characteristics of Ash Relevant to Boiler Slagging, Corrosion and Erosion (81-JPGC-Fu-1) (A) **D 93**
Fuel Gas From Coal—Industrial Applications (81-IPC-Fu-3) (A) **D 101**
Fuels from Waste (CB) **N 116**
A Furnace Wall Ash Monitoring System for Coal Fired Boilers (80-WA/Fu-1) (A) **F 127**
Gasification of Coal for Cooperative Industrial Use (81-IPC-Fu-1) (A) **D 101**
Industrial Fluidized Bed Steam Generation (81-IPC-Fu-2) (A) **D 101**

K-Fuel (ES) Ja 20
KILnGAS Coal Gasification: An Idea Whose Time Has Come (81-JPGC-Fu-5) (A) D 94
Low-Btu Gas From An Environmentally Clean Pellet Fuel (80-WA/Fu-2) (A) F 126
The Potential for Use of Peat Blends with Coal for Electric Power Generation (81-JPGC-Fu-2) (A) D 93
Power from Peat: Irish Practice and Cost Data (81-JPGC-Fu-6) (A) D 94
Predicted Burning Times of Nonporous Coal Particles as a Function of Pressure and Particle Size (80-WA/Fu-5) (A) F 127
Predicting the Effect of Fly Ash Resistivity Modification on Precipitator Collection Efficiency (81-JPGC-Fu-3) (A) D 93
Prediction of NO_x Emissions (81-GT-119) (A) Je 114
Reducing Auxiliary Fuel Consumption in Pulverized-Coal-Fired Boilers (80-WA/Fu-3) (A) F 126
Refuse-Derived Fuels (80-JPGC/Fu-2) (A) Ja 99
Sunflower Seed Hulls as Supplementary Fuel to Coal-Fired Power Plants (81-JPGC-Fu-10) (A) D 94
A UK View on Future Fuels (81-GT-87) (A) Je 111
The Use of Additives to Reduce Ash Fouling Problems in Lignite-Fired Boilers (80-JPGC/Fu-3) (A) Ja 99
Use of Freeze Conditioning Agents and a Thawing Product on Coal (80-JPGC/Fu-5) (A) Ja 98
Fujisawa, F. Method of Determining Locations of Unbalances in Rotating Machines (81-DET-12) (A) D 88

Fulbright Scholars
Fulbright Scholars for Short-Term Visits (EN) D 79
Full Agenda
Fall Forecast for Congress (WW) O 82
Full-Authority Digital Controls
Full-Authority Digital Electronic Controls for Civil Aircraft Engines (81-GT-139) (A) Jl 85
Full-Coverage Film Cooling
Studies of Full-Coverage Film Cooling Part 1: Cooling Effectiveness of Thermally Conductive Wall (81-GT-37) (A) Je 107; Part 2: Measurement of Local Heat Transfer Coefficient (81-GT-38) (A) Je 106
Fuller, J. D. O_2 Sensing for Environmental Control and Monitoring Systems (80-ENAs-41) (A) Mr 113

Fully Developed Flow
Heat Transfer of Fully Developed Flow in Curved Tubes (81-HT-39) (A) O 98
Fulton, R. E. Using CAD/CAM to Improve Productivity: The IPAD Approach N 64
Function Generating Mechanisms
Optimal Synthesis of Tolerance and Clearance in Function Generating Mechanisms—A Parametric Programming Problem (81-DET-5) (A) O 102
Function Generator
Synthesis of the Four-Bar Function Generator: A Novel Approach (80-DET-26) (A) F 119
Functional Relationships
The Adiabatic Adsorption-Desorption Characteristics of Silica Gel Beds—Part 1: Theory (80-WA/Sol-30) (A) Ap 94; Part 2: Curve Fits (80-WA/Sol-31) (A) Ap 94

Fundamental Constants
Precision Measurement Grants (EN) N 94
Fundamental Problems
Application of the Theory of Conjugate Surfaces in Mechanisms Design: Part 1—General Concepts (80-DET-29) (A) F 120
Funding
R&D Funding Increased Slightly for '81 (NR) F 64
Fung, D. H. Design of Digital Feedforward/Preview Controllers for Processes With Predetermined Feedback Controllers (80-WA/DSC-2) (A) Mr 114
Funk, J. E. Development of a High-Solids, Coal-Water Mixture for Application as a Boiler Fuel (81-JPGC-Fu-4) (A) D 93

Furnace Walls
A Furnace Wall Ash Monitoring System for Coal Fired Boilers (80-WA/Fu-1) (A) F 127
Furnaces
Experimental Results in the Modeling and Control of a Small Furnace (80-WA/DSC-31) (A) Mr 116
Furuhama, S. ALH2 Engine Fuel System on Board—Cold GH2 Injection into Two-Stroke Engine with LH2-Pump (81-HT-81) (A) O 99
Fuselage Sidewall
Prediction of Aircraft Interior Noise Using the Statistical Energy Analysis Method (81-DET-102) (A) D 90
Fu-Sheng, C. Combined Friction and Material Damping of Resonant Steam Turbine Blade Response (81-DET-136) (A) D 92
Fusion
Elmo Bumpy Torus (ES) S 25
Monster Magnets (ES) My 18
Fusion Power
Materials Problems, Fusion, Alternative Fuels, Novel Energy Sources (NR) My 61
Mirror Fusion—Another Path to Fusion Power Jl 24
Fusion Reactors
Closed-Cycle Gas Turbine Applications for Fusion Reactos (81-GT-17) (A) Je 105
The OHTE Concept (ES) N 71
Fusion Research
Mirror-Polishing Technique for World's Largest CO_2 Lasers (BTR) N 75
Futakawa, A. Transient Torque Produced in Main Shaft of Electric Hoist During Motor Start-Up and Emergency Brake Operations (81-DET-60) (A) N 105
Future Fuels
A UK View on Future Fuels (81-GT-87) (A) Je 111

G

Gabraiel, S. A. Evaluation of Dynamic Load Combination Fatigue Damage (81-PVP-20) (A) Ag 80
Gaffoglio, C. J. Tube to Tubesheet Joint Strengths (81-JPGC-Pwr-7) (A) N 110
Gaither, R. B. CAD/CAM in Mechanical Engineering (Ed) N 27; Center Stage in the Decade of the Engineer (Ed) D 17; New Leadership and the Future (Ed) Ag 19; The New National Mood and ASME (Ed) S 23; Revitalzing America—an ASME Challenge and Opportunity (Ed) Jl 17; The Washington Scene: Current and Future (Ed) O 25
Galaxies
Seeing Halfway Back to the Beginning (BTR) Je 87
Galileo Probe
Galileo Probe Forebody Entry Thermal Protection: Aerothermal Environments and Heat Shielding Requirements (80-ENAs-24) (A) Mr 112
Gallagher, P. H. Elections to Fellow Grade S 78
Gallus, H. E. The Influence of Blade Number Ratio and Blade Row Spacing on Axial-Flow Compressor Stator Blade Dynamic Load and Stage Sound Pressure Level (81-GT-165) (A) Jl 87
Galvanizing
Hot Dip for a Silent Killer (BTR) O 81
Galvin, D. P. Picture Worth 500 Words (C) S 48
Gamacho, B. The Finite Element Design of Linkages—A Comparison of Timoshenko and Euler Bernoulli Elements (81-DET-109) (A) N 107
Gamble, R. L. Industrial Fluidized Bed Steam Generation (81-IPC-Fu-2) (A) D 101
Gamma Radiation
Stored Energy of Gamma-Irradiated 97 Percent Pure Rocksalt (80-WA/HT-53) (A) Ap 106
Gandhi, M. V. The Finite Element Analysis of Flexible Components of Mechanical Systems Using a Mixed Variational Principle (80-DET-64) (A) Mr 107; The Finite Element Analysis of Mechanism Components Made From Fiber-Reinforced Composite Materials (80-DET-63) (A) Mr 107
Ganesan, N. Response of Sandwich Panels with Viscoelastic Core Under Random Excitation at a Point (81-DET-43) (A) O 104
Ganser, D. A. Development of an Instrumented Marine Riser Joint (81-Pet-25) (A) My 90
Gao-en, L. Application of Scaling in Afterburner Test and Development (81-GT-194) (A) Jl 89
Gaps
Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (80-WA/FE-9) (A) My 86
Garbage Disposal
Nature's Garbage Disposal? (C) Ap 56
Garbage Processing
Steel Can Cornucopia (ES) Jl 18
Garcia de Jalon, J. Application of B-Spline Functions to the Motion Specification of Cams (80-DET-28) (A) F 120; A Computer Method for the Finite Displacement Problem in Spatial Mechanisms (81-DET-110) (A) N 107; A Simple Numerical Method for the Kinematic Analysis of Spatial Mechanisms (80-DET-23) (A) F 120
Garg, D. P. Modeling and Dynamic Response of Maglev Vehicles Subjected to Crosswind Gusts (80-WA/DSC-8) (A) Mr 115
Garg, R. D. A Numerical Approach to the Stability of Rotor-Bearing Systems (81-DET-61) (A) D 90
Garg, V. K. Comparative Study of Direct Numerical Integration Schemes in Linear and Nonlinear Analysis of a Dynamic System (80-WA/DSC-26) (A) Mr 116; Fatigue Damage of the Locomotive Suspension Elements Under Random Loading (80-WA/DE-7) (A) Ap 98; Stability of Developing Flow in a Pipe—Nonparallel Effects (81-APM-13) (A) S 84; Thermal Fatigue Analysis of a Railcar Wheel Under Drag Braking (80-WA/DE-4) (A) Ap 98
Garivaltis, D. S. Fatigue Damage of the Locomotive Suspension Elements Under Random Loading (80-WA/DE-7) (A) Ap 98

Garland, R. V. Repowering with Coal (81-JPGC-GT-9) (A) D 95
Garmirian, J. E. The Use of Nickel and Cobalt Catalysts in a Bosch Reactor (80-ENAs-15) (A) Mr 111
Garreth, R. H. Marketplace Developments in Storage Furniture, Racks and Shelves (80-WA/MH-11) (A) Ap 96
Gartland, C. W. Predicting the Effect of Fly Ash Resistivity Modification on Precipitator Collection Efficiency (81-JPGC-Fu-3) (A) D 93
Gartling, D. K. A Numerical Study of Natural Convection in a Horizontal Porous Layer Subjected to an End-to-End Temperature Difference (80-WA/HT-39) (A) Ap 106
Garvey, D. C. Precision Speed Control Systems with Throttle Disturbance Forces (81-DGP-3) (A) My 87

Gas
The Challenge of LNG in the 1980s Mr 46
Utility Cadet Program (EN) Ap 83

Gas Bearings
Analysis of Externally Pressurized, Double-Pad, Gas Porous Thrust Bearing (81-Lub-25) (A) D 98
An Experimental Investigation of Molecular Rarefaction Effects in Gas Lubricated Bearings at Ultra-Low Clearances (81-Lub-44) (A) D 99
Gas Composition
A Mathematical Model of a Combustion Pot: Comparison of Theory and Experiment (80-WA/HT-32) (A) Ap 105
Gas Compression
The Ruston Tornado—A 6-MW Gas Turbine for Industrial Application (81-GT-171) (A) Jl 87
Gas-Cooled Solar Power Plants
Combined Gas and Steam Cycle for a Gas-Cooled Solar Tower Power Plant (81-GT-102) (A) Je 112
Gas Discharge
PWR S/RV Line Qualification to Gas Discharge Conditions (81-PVP-41) (A) Ag 82
Gas Enclosures
A Simplified Approach to the Evaluation of the Geometric-Mean Transmittance and Absorptance for Gas Enclosures (81-HT-62) (A) O 99
Gas Engines
NO_x Reduction on Large Bore SI Engines Using Catalytic Converters (81-DGP-9) (A) My 88
Gas Gap
Heat Switch Has No Moving Parts (BTR) My 51
Gas Laser
Sun-Powered Laser (BTR) Ap 59
Gas Leaks
Passive Acoustic Detection of Gas Leaks in Buried Pipes (80-WA/NC-17) (A) F 125
Gas Lift System
Application of Systems Analysis Techniques in Optimizing Gas Lift Installations (81-Pet-33) (A) My 91
Gas-Particle Flows
Numerical Computation of Swirling Gas-Particle Flows: Application to Pulverized Coal Classifiers (80-WA/HT-31) (A) Ap 105
Gas Research Institute
Coal-Based Energy Sources (BTR) Ja 82

Gas Reserves
Pipelining Gas from the Canadian High Arctic (81-Pet-20) (A) **My 90**

Gas Turbine Engines
Application of Structural Optimization Technique to Reduce the External Vibrations of a Gas-Turbine Engine (81-DET-143) (A) **N 108**
Gas Turbines for Automotive Use (CB) **S 90**
Inclusions and Service Induced Cracks in a Mature Population of Gas Turbine Engine Bearings (81-Lub-48) (A) **D 99**

Gas Turbines
Advanced Coating for Gas Turbine Materials (81-GT-85) (A) **Je 111**
Aerodynamic Design and Experimental Study of Marine Gas Turbine Exhaust Volutes (81-GT-143) (A) **Jl 84**
Aerodynamic Design and Testing of an Improved First-Stage Compressor Rotor for a Heavy-Duty Gas Turbine (81-GT-135) (A) **Jl 85**
An Aerothermodynamic Analysis of Transonic Compressor Rotors Containing Three-Dimensional Shocks (81-GT-120) (A) **Je 114**
Ammonia Bottoming Cycle Development at Electricité de France for Nuclear Power Plants (81-GT-178) (A) **Jl 88**
Analysis and Asymptotic Solutions Compressible Turbulent Corner Flow (81-GT-149) (A) **Jl 86**
Analysis for Predicting Adiabatic Wall Temperatures with Single Hole Coolant Injection into a Low Speed Crossflow (81-GT-91) (A) **Je 111**
Analytical Consideration of Fuel Economy and Dynamic Response of a Regenerative High Temperature Automobile Gas Turbine—Part II (81-GT-218) (A) **Jl 91**
ANSI B 133.7 Survey of Gas Turbine Synthetic Liquid Fuels (81-JPGC-GT-8) (A) **D 95**
Application of Airblast Atomizing Fuel Nozzles to Two Prototype Industrial Gas Turbines (81-GT-82) (A) **Je 110**
Application of Basic Aerothermodynamic Equations Governing Three-Dimensional Flow in Turbomachinery and Identification of Type of Equation (81-GT-142) (A) **Jl 84**
Application of a Fast Pseudo-Unsteady Method to Steady Transonic Flows in Turbine Cascades (81-GT-124) (A) **Je 113**
Application of Lifting Line Theory to Streamsurface Theory in Subsonic Flow (81-GT-166) (A) **Jl 86**
Application of Scaling in Afterburner Test and Development (81-GT-194) (A) **Jl 89**
Application of the Semi-Loof Thin Shell Element to the Analysis of Aircraft Engine Structures (81-GT-104) (A) **Je 112**
Application of Water Cooling for Improved Gas Turbine Fuel Flexibility and Availability (81-GT-68) (A) **Je 109**
A Baseload Gas Turbine to Meet Utility Requirements for Reliability and Availability (81-GT-127) (A) **Jl 84**
Bench Scale Testing of Low No_x LBG Combustors (81-GT-59) (A) **Je 109**
Blading Heat Transfer Considerations in a Reheat-Gas-Turbine Combined Cycle (81-GT-155) (A) **Jl 86**
A Blockage Model for Centrifugal Compressor Impellers (81-GT-11) (A) **Je 105**
Boundary Layer Development on Turbine Airfoil Suction Surfaces (81-GT-204) (A) **Jl 90**
Carbon/Carbon Components for Advanced Gas Turbine Engines (81-GT-35) (A) **Je 107**
Ceramic to Metal Attachment Using Low Modulus Brunsbond® Pad (81-GT-160) (A) **Jl 86**
The CIVIC—A Concept in Vortex Induced Combustion, Part II (81-GT-12) (A) **Je 105**
Closed-Cycle Gas Turbine Applications for Fusion Reactors (81-GT-17) (A) **Je 105**
Coal-Fired Heaters for CCGT Cogeneration Service (81-GT-212) (A) **Jl 90**
Combined Gas and Steam Cycle for a Gas-Cooled Solar Tower Power Plant (81-GT-102) (A) **Je 112**
Combustion of Methanol and Liquefied Butane in a Gas Turbine Combustor (81-GT-50) (A) **Je 108**
Commercial Engine Logistics Cost Projections—A Dynamic and Flexible Approach (81-GT-114) (A) **Je 113**
Compact Closed Cycle Brayton System for Marine Propulsion (80-WA/GT-4) (A) **Ap 102**
Comparison of the HTTT Reheat-Gas-Turbine Combined Cycle with the HTTT Nonreheat Gas-Turbine Combined Cycle (81-GT-69) (A) **Je 109**
Component Mode Synthesis of Large Rotor Systems (81-GT-147) (A) **Jl 85**
A Computation and Comparison with Measurements of Transonic Flow in an Axial Compressor Stage with Shock and Boundary Layer Interaction (81-Gr/GT-5) (A) **O 101**
Computation of Three-Dimensional Flow Fields Through Rotating Blade Rows and Comparison with Experiment (81-GT-121) (A) **Je 114**
Contamination of Centrifugal Process Gas Compressor Lube Oil and Seal Oil Systems by Hydrocarbon Condensate (81-GT-182) (A) **Jl 89**
Control System for the Mainline Gas Turbine and Crude Oil Pumps on the Saudi Arabian Petroline (81-GT-33) (A) **Je 106**
Controlled Combustion of a Varying Low-Btu Coal-Derived Gas (81-GT-134) (A) **Jl 85**
Cooled Radial In-Flow Turbines for Advanced Gas Turbine Engines (81-GT-213) (A) **Jl 90**
Cooling Air Flow Characteristics in Gas Turbine Components (81-GT-76) (A) **Je 110**
Correction for Streamline Curvature and Coriolis Force in a Boundary Layer Integral Method (81-GT-97) (A) **Je 111**
A Corrosion-Erosion Test Rig for High-Temperature Turbine Materials Evaluation (81-GT-198) (A) **Jl 89**
Critical Materials—A New Dimension (81-GT-61) (A) **Je 109**
Deposition—Hot Corrosion in Gas Turbine Engines (81-GT-153) (A) **Jl 86**
Design Analysis of High-Efficiency Low-Stress Ceramic Gas Turbines (81-GT-130) (A) **Jl 84**
Design Concepts and Equipment Selection Processes for Northern Compressor Stations (81-GT-131) (A) **Jl 84**
Design and Development of the Combustor Inlet Diffuser for the NASA/GE Energy Efficient Engine (81-GT-129) (A) **Jl 84**
The Design and Performance of a Sturdy Industrial Combustion Chamber for a 14-MW Gas Turbine (81-GT-48) (A) **Je 108**
Design and Preliminary Results of a Fuel Flexible Industrial Gas Turbine Combustor (81-GT-108) (A) **Je 113**
Design of Turbo Machine Set for Fluid Catalytic Cracking Plant and its Shop-Testing Under Full-Load Conditions (81-GT-101) (A) **Je 112**
A Development of the Fuel Atomizing Device Utilizing High Rotational Speed (81-GT-180) (A) **Jl 88**
Development of a Large-Scale Wind Tunnel for the Simulation of Turbomachinery Airfoil Boundary Layers (81-GT-6) (A) **Je 104**
Development of a Low-NO_x Lean Premixed Annular Combustor (81-GT-40) (A) **Je 106**
Development of FT9 Marine Gas Turbine (81-GT-197) (A) **Jl 89**
Development of the Self-Temperature Compensated Resistance Strain Gage Used up to 700°C (81-GT-118) (A) **Je 113**
Development of a Small-Scale Catalytic Gas Turbine Combustor (81-GT-43) (A) **Je 106**
The Development of a Substitute Bird Model (81-GT-23) (A) **Je 106**
Development and Testing of a Ceramic Turbocharger Rotor (81-GT-195) (A) **Jl 89**
Digital Control Makes a Commercial Debut on the JT9D Engine (81-GT-199) (A) **Jl 89**
Dual Pressure Steam/Immiscible Liquid Cycles for Gas Turbine Exhaust Heat Recovery (81-GT-55) (A) **Je 108**
Dust and Sand Protection for Marine Gas Turbines (81-GT-74) (A) **Je 110**
Economics of Heavy Fuels in Gas Turbines and Combined Cycles (81-GT-45) (A) **Je 107**
The Effect of Bending-Torsion Coupling on Fan and Compressor Blade Flutter (81-GT-163) (A) **Jl 87**
Effect of Blade Stagger Angle on Performance of a Transonic Compressor with Low Hub-Tip Ratio (81-GT-177) (A) **Jl 88**
Effect of Casing Treatment on Performance of a Three-Stage L.P. Compressor (81-GT-159) (A) **Jl 86**
Effect of Fuel Nitrogen and Hydrogen Content on Emissions in Hydrocarbon Combustion (81-GT-63) (A) **Je 109**
The Effect of Impeller Tip Design on the Performance of a Mixed Flow Turbocharger Compressor (81-GT-7) (A) **Je 104**
Effect of Temperature Dependent Mechanical Properties on Thermal Stress in Cooled Turbine Blades (81-GT-105) (A) **Je 112**
Effect of Time-Dependent Flight Loads on Turbofan Engine Performance Deterioration (81-GT-203) (A) **Jl 90**
Effect of Water Injection for NO_x Reduction with Synthetic Liquid Fuels Containing High Fuel-Bound Nitrogen in a Gas Turbine Combustor (81-GT-51) (A) **Je 108**
Effects of Inlet Conditions and Water Injection on Emissions from a Duel-Fuel Industrial Gas Turbine (81-GT-47) (A) **Je 108**
Effects of Size and Reynolds Number on Centrifugal Diffuser Performance (81-GT-8) (A) **Je 105**
Effects of Vaneless Diffuser Geometry on Flow Instability in Centrifugal Compression Systems (81-GT-10) (A) **JE 104**
Effects of Vitiation on Axial Catalyst Bed Temperature Profiles (81-GT-141) (A) **Jl 84**
Efficiency Prediction for Axial-Flow Turbines Operating With Nonconventional Fluids (81-GT-15) (A) **Je 105**
Engine Cycle Selection for Advanced Technology Engine Studies (81-GT-191) (A) **Jl 89**
Engine Dynamic Analysis With General Nonlinear Finite-Element Codes—Part 1: Overall Approach and Development of Bearing Damper Element (81-GT-151) (A) **Jl 85**
Engine Maintenance Cost Calculation Method (81-GT-34) (A) **Je 107**
Equivalent Performance Testing of Multisection Compressors (81-GT-150) (A) **Jl 86**
Establishing Cruise-Engine Cycle Payoffs for a Supersonic VSTOL Aircraft (81-GT-100) (A) **Je 112**
Evaluation of Advanced Combustors for Dry NO_x Suppression with Nitrogen Bearing Fuels in Utility and Industrial Gas Turbines (81-GT-125) (A) **Je 113**
Evaluation of Concepts for Controlling Exhaust Emissions from Minimally Processed Petroleum and Synthetic Fuels (81-GT-157) (A) **Jl 86**
The Evaluation of Fuel Property Effects on Air Force Gas Turbine Engines—Program Genesis (81-GT-1) (A) **Je 104**
Evaluation of the Impact on CGT Operation when Converting to Crude Oil Fuel (81-GT-207) (A) **Jl 89**
Evaluation of a Method for Heat Transfer Measurements and Thermal Visualization Using a Composite of a Heater Element and Liquid Crystals (81-GT-93) (A) **Je 112**
Evaluation of Methods for the Treatment of Mean Stress Effects on Low-Cycle Fatigue (81-GT-122) (A) **Je 114**
Experience with Large Heavy-Duty Gas Turbine Rotors (81-GT-181) (A) **Jl 88**
Experimental Determination of Transition Reynolds Number for Unsteady Film Cooling (81-GT-94) (A) **Je 111**
Experimental Investigation of a Low Hub-to-Tip Ratio Single Stage Transonic Fan (81-GT-209) (A) **Jl 90**
An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) (A) **Je 106**
Fabrication of Injection Molded Sintered Alpha SiC Turbine Components (81-GT-161) (A) **Jl 86**
A Family of Small, Low Cost Turbojet Engines for Short Life Applications (81-GT-205) (A) **Jl 90**
A Fast Numerical Procedure to Solve the Meridional Equations of Motion in a Multistage Axial Flow Turbomachine (81-GT-133) (A) **Jl 85**
Field Experience with Gas Turbine Inlet Air Filtration (81-GT-193) (A) **Jl 89**
Finite Element Methods for Transonic Blade-to-Blade Calculation in Turbomachines (81-GT-5) (A) **Je 104**
Flow Transition Phenomena and Heat Transfer Over the Pressure Surfaces of Gas Turbine Blades (81-GT-107) (A) **Je 112**
Forging Simulations and Properties Achievable for

Large Waspaloy Forgings for Land-Based Gas Turbines (81-GT-84) (A) **Je 110**
Formation of SO_3 in Gas Turbines (81-GT-42) (A) **Je 106**
Fractional-Frequency Rotor Motion Due to Non-symmetric Clearance Effects (81-GT-145) (A) **JI 84**
Frequency Control with Closed-Cycle Gas Turbines in an Interconnected Electric Grid (80-WA/GT-5) (A) **Ap 102**
Full-Authority Digital Electronic Controls for Civil Aircraft Engines (81-GT-139) (A) **JI 85**
Full-Flow Debris Monitoring in Gas Turbine Engines (81-GT-60) (A) **Je 109**
Full Potential Solution of Transonic Quasi-3-D Flow Through a Cascade Using Artificial Compressibility (81-GT-70) (A) **Je 109**
Further Studies of the Influence of Thermal Effects on the Predicted Acceleration of Gas Turbines (81-GT-21) (A) **Je 105**
Gas Turbine Data Acquisition Using a Microcomputer (81-GT-83) (A) **Je 110**
Gas Turbine Materials Evaluation Program Utilizing Coal Derived Gaseous Fuel (81-GT-65) (A) **Je 109**
Gas Turbine Performance Deterioration and Water Wash Frequency (81-JPGC-GT-10) (A) **D 95**
Gas Turbine Vanadium Inhibition (81-GT-187) (A) **JI 88**
LM2500 Gas Turbines for Mobil Statfjord B Platform—the North Sea (81-GT-172) (A) **JI 87**
Gemini T-20G-8 XM1 Tank APU (81-GT-81) (A) **Je 110**
A Generalized Mathematical Model to Estimate Gas Turbine Starting Characteristics (81-GT-202) (A) **JI 90**
Heat Transfer Coefficients for Staggered Arrays of Short Pin Fins (81-GT-75) (A) **Je 110**
Heat Transfer in a Periodic Boundary Layer Near an Axisymmetric Stagnation Point on a Circular Cylinder (81-GT-92) (A) **Je 112**
High Temperature Removal of Alkali and Particulates in Pressurized Gasification Systems (81-GT-67) (A) **Je 109**
Hot Gas Cleanup Program for Pressurized Fluidized Bed Combustor Combined Cycle Power Generation (81-JPGC-GT-5) (A) **D 95**
HTGR-GT Primary Coolant Transiant Resulting from Postulated Turbine Deblading (81-GT-19) (A) **Je 105**
HTGR-GT Systems Optimization Studies (80-WA/GT-3) (A) **Ap 102**
IM 2000 Marine Gas Turbine-Design, Development and Testing (81-GT-196) (A) **JI 89**
Impacts of Broadened-Specification Fuels on Aircraft Turbine Engine Combustors (81-GT-2) (A) **Je 104**
Improved Jet Engine Maintenance Through Automated Vibration Diagnostic Systems (81-GT-62) (A) **Je 109**
Improved Particle Trajectory Calculations Through Turbomachinery Affected by Coal Ash Particles (81-GT-53) (A) **Je 108**
The Influence of Blade Number Ratio and Blade Row Spacing on Axial-Flow Compressor Stator Blade Dynamic Load and Stage Sound Pressure Level (81-GT-165) (A) **JI 87**
The Influence of Premixed Combustion Flame Stabilizer Geometry on Flame Stability and Emissions (81-GT-26) (A) **Je 106**
The Influence of Unsteady Rotor Response on a Distorted Flow Field (81-GT-185) (A) **JI 89**
Interaction of Compressor Rotor Blade Wake with Wall Boundary Layer/Vortex in the End-Wall Region (81-Gr/GT-1) (A) **O 101**
Interactive Multi-Mode Blade Impact Analysis (81-GT-79) (A) **Je 110**
Inverse or Design Calculations for Non-Potential Flow in Turbomachinery Blade Passages (81-GT-78) (A) **Je 110**
An Inverse Time Marching Method for the Definition of Cascade Geometry (81-GT-167) (A) **JI 87**
An Investigation of Axial Compressor Rotor Aerodynamics (81-GT-56) (A) **Je 108**
An Investigation of a Preswirled Cooling Airflow to a Turbine Disc by Measuring the Air Temperature in the Rotating Channels (81-GT-132) (A) **JI 84**
ITI GT601-A New Approach to Vehicular Gas Turbine Power Unit Design (81-GT-152) (A) **JI 86**
Life Cycle Cost Before, During and After the Design of Aircraft Propulsion Systems (81-GT-111) (A) **Je 112**
Linear-Nonlinear Interface for Finite Element Impact Analysis (81-GT-39) (A) **Je 106**
An LNG Carrier Adjustable Speed Gas Turbine Electric Propulsion System (81-GT-112) (A) **Je 113**
Low Emissions Silo Combustor (81-GT-46) (A) **Je 107**
Low NO_x Combustion Systems for Burning Heavy Residual Fuels and High-Fuel-Bound Nitrogen Fuels (81-GT-109) (A) **Je 113**
Maintenance of Aero-Derived Industrial Gas Turbines (81-GT-192) (A) **JI 89**
A Market Research Effort Leading to the Development of a High-Efficiency 10,000-shp Gas Turbine System (81-GT-190) (A) **JI 89**
Material, Design, and Test Aspects of Ceramic Component Development (81-GT-179) (A) **JI 88**
Materials Exposure Test Facilities for Varying Low-Btu Coal-Derived Gas (81-GT-170) (A) **JI 87**
Materials Problems, Fusion, Alternative Fuels, Novel Energy Sources (NR) **My 61**
A Mean Line Prediction Method for Axial Flow Turbine Efficiency (81-GT-58) (A) **Je 109**
Measurement and Analysis of Total-Pressure Unsteadiness Data from a Axial-Flow Compressor Stage (81-Gr/GT-2) (A) **O 102**
Measurement of Heat Flux and Pressure in a Turbine Stage (81-GT-88) (A) **Je 111**
Mechanical Design of a High-Efficiency 7.5-MW (10,000-hp) Gas Turbine (81-GT-210) (A) **JI 90**
Mechanical, Thermal and Hydraulic Design of a Composite Construction Water-Cooled Gas Turbine Nozzle (81-JPGC-GT-3) (A) **D 95**
Methanol Combustion in a 26-MW Gas Turbine (81-GT-64) (A) **Je 109**
A Method for the Calculation of the Wall Layers Inside the Passage of a Compressor Cascade With and Without Tip Clearance (81-GT-168) (A) **JI 87**
A Model for Dynamic Loss Response in Axial-Flow Compressors (81-GT-154) (A) **JI 86**
Modified Brayton Cycles Utilizing Alcohol Fuels (81-GT-103) (A) **Je 112**
A Modular Optimizing Calculation Method of Power Station Energy Balance and Plant Efficiency (81-GT-22) (A) **Je 105**
MS5001E—A New 100-MW Gas Turbine (81-GT-31) (A) **Je 106**
NASA Gas Turbine Stator Vane Ring (81-GT-208) (A) **JI 90**
NASA Research in Aeropropulsion (81-GT-96) (A) **Je 111**
The Navy PATE Program (81-GT-189) (A) **JI 88**
New Correlations of the Two-Dimensional Turbine Cascade Aerodynamic Performance (81-GT-128) (A) **JI 84**
New Features in the Design of Axial-Flow Compressors with Tandem Blades (81-GT-113) (A) **Je 113**
Nonequilibrium Streamline Curvature Throughflow Calculations in Wet Steam Turbines (81-Gr/GT-3) (A) **O 101**
Nonlinear Damage Cumulation in Solution-Treated and Aged Titanium 6A1-4V (81-GT-106) (A) **Je 112**
Nuclear Blast Response of Airbreathing Propulsion Systems: Laboratory Measurements with an Operational J-85-5 Turbojet Engine (81-GT-164) (A) **JI 87**
Operational, Control and Protective System Transient Analysis of the Closed-Cycle GT-HTGR Power Plant (80-WA/GT-1) (A) **Ap 102**
Optimization Design Considerations for Cogeneration Plants (81-JPGC-GT-7) (A) **D 95**
Optimization of Gas Turbine Cycles with Variable Number of Combustion, Compressor, and Inter-Cooler Stages (81-JPGC-GT-6) (A) **D 95**
Optimization of the HHT-1640 MW(th) Demonstration Nuclear Power Plant (HHT-Project) (81-GT-13) (A) **Je 105**
Optimum Friction Damping of a Flexible Rotor (81-GT-156) (A) **JI 86**
Outline of Plan for Advanced Research Gas Turbine (81-GT-28) (A) **Je 107**
The Partial Coal Gasification Combined Cycle Power Plant (81-JPGC-GT-2) (A) **D 95**
Pattern Factor Improvement in the F-100 Primary Combustion System (81-GT-25) (A) **Je 105**
The Performance of Portable Evacuation Compressors in Gas Transmission Service (81-GT-140) (A) **JI 85**
Power Generation From a 770°C Heat Source by Means of a Main Steam Cycle, a Topping Closed Gas Cycle and an Ammonia Bottoming Cycle (81-GT-18) (A) **Je 105**
Prediction of NO_x Emissions (81-GT-119) (A) **Je 114**
Preliminary Design of Dry Cooling Tower for the Closed Cycle Gas Turbine HTGR (81-GT-20) (A) **Je 105**
Preliminary Study on Reheat Combustor for Advancad Gas Turbine (81-GT-29) (A) **Je 106**
Premixing and Flash Vaporization in a Two-Stage Combustor (81-GT-41) (A) **Je 106**
The Present Role of High Speed Cascade Testing (81-GT-95) (A) **Je 111**
Process Centrifugal Compressor Efficiency Improvement (80-WA/GT-2) (A) **Ap 102**
Progress in the Development of the Marine Spey, SM1A (81-GT-186) (A) **JI 89**
The Quantitative Analysis of Three-Dimensional Displacement Fields by Single Laser Hologram (81-GT-215) (A) **JI 91**
A Quasi-Three-Dimensional Blade Surface Boundary Layer Analysis for Rotating Blade Rows (81-GT-126) (A) **Je 114**
Re-Examination of Design Criteria for Natural Gas Compressor Station "Ravenstein"—Holland (81-GT-188) (A) **JI 88**
Refrigerating Gas Turbine Compressor Air Intake (81-GT-176) (A) **JI 88**
Regenerative Gas Turbines for Naval Escort Ships (81-GT-115) (A) **Je 112**
The Reheat Gas Turbine with Steam-Blade Cooling—A Means of Increasing Reheat Pressure, Output and Combined Cycle Efficiency (81-GT-30) (A) **Je 106**
Reliability Assessment of Advanced Coal-Fired Power Systems (81-JPGC-GT-1) (A) **D 94**
Repowering with Coal (81-JPGC-GT-9) (A) **D 95**
The Response of a Thermal Barrier System to Acoustic Excitation in a Gas Turbine Nuclear Reactor (81-GT-16) (A) **Je 105**
The Role of Flight Research Vehicles in Prop-Fan Technology Development (81-GT-216) (A) **JI 91**
Rotating Blade Vibration Analysis Using Shells (81-GT-80) (A) **Je 110**
Rotor-Tip Leakage: Part 1—Basic Methodology (81-GT-71) (A) **Je 110**; Part II—Design Optimization Through Viscous Analysis and Experiment (81-GT-72) (A) **Je 110**
Rotor Wake Mixing Effects Downstream of a Compressor Rotor (81-GT-98) (A) **Je 111**
The Ruston Tornado—A 6-MW Gas Turbine for Industrial Application (81-GT-171) (A) **JI 87**
Semi-Inverse Method of Computation in Inviscid Transonic Flows—Application to the Design of Turbomachine Blades Profiles (81-GT-206) (A) **JI 90**
Sensitivity of Turbine Blade Temperatures to Tolerances of Design Variables (81-GT-90) (A) **Je 111**
Short Duration Measurements of Heat Transfer Rate to a Gas Turbine Rotor Blade (81-GT-146) (A) **JI 85**
Similarity Law of Transonic Flow Fields Around Cascades (81-GT-36) (A) **Je 107**
A Simple Method for Compressor Stall Cell Propagation (81-GT-73) (A) **Je 110**
Sintering Microstructure and Properties of Si_3N_4 and SiC Based Structural Ceramics (81-GT-220) (A) **JI 91**
Small Gas Turbine with Large Parabolic Dish Collectors (81-GT-201) (A) **JI 90**
A Solar Receiver For a 25-kW(e) Gas Turbine **Ja 26**
Solution of Plane Cascade Flow Using Improved Surface Singularity Methods (81-GT-169) (A) **JI 87**
Some Factors Affecting Altitude Relighting Performance of Turbojet Engine Combustor (81-GT-49) (A) **Je 108**
Some Modifications to, and Operational Experiences with, the Two-Dimensional, Finite-Difference, Boundary-Layer Code, STAN5 (81-GT-89) (A) **Je 111**
Some Technological Problems Associated with the Manufacture of Blades and Vanes for Stationary Gas Turbines in the USSR (81-GT-173) (A) **JI 88**
Spanwise Mixing in Axial-Flow Turbomachines (81-GT-57) (A) **Je 109**
Stalling Pressure Rise Capability of Axial Flow

Compressor Stages (81-GT-3) (A) **Je 104**
Streamwise Flow and Heat Transfer Distributions for Jet Array Impingement with Crossflow (81-GT-77) (A) **Je 110**
Strengthening Mechanisms and Process Controls for Super Waspaloy (81-GT-175) (A) **Jl 88**
Studies of Full-Coverage Film Cooling Part 1: Cooling Effectiveness of Thermally Conductive Wall (81-GT-37) (A) **Je 107**; Part 2: Measurement of Local Heat Transfer Coefficient (81-GT-38) (A) **Je 108**
A Study on Centrifugal Impeller and Diffuser Flow (81-GT-9) (A) **Je 104**
A Study of External Fuel Vaporization (81-GT-158) (A) **Jl 86**
A Study of the Modal Truncation Error in the Component Mode Analysis of a Dual-Rotor System (81-GT-144) (A) **Jl 84**
Study of Secondary Flows in Blade Cascades of Turbomachines (81-Gr/GT-4) (A) **O 102**
Superhybrid Composite Blade Impact Studies (81-GT-24) (A) **Je 106**
Supersonic Stall Flutter of High-Speed Fans (81-GT-184) (A) **Jl 89**
A System to Measure the Response of a High-Speed Rotor to a Sudden Imbalance (81-GT-117) (A) **Je 113**
Test Verification of Water Cooled Gas Turbine Technology (81-GT-66) (A) **Je 109**
Theoretical Study of Flow Instabilities and Inlet Distortions in Axial Compressors (81-GT-211) (A) **Jl 90**
A Theory for Fine Particle Deposition in 2-D Boundary Layer Flows and Application to Gas Turbines (81-GT-54) (A) **Je 108**
Thirty Percent Fuel Saving by Adding Combustion Within Gas Turbine (81-JPGC-GT-4) (A) **D 94**
Time-Variant Aerodynamics of High-Turning Blade Elements (81-GT-123) (A) **Je 114**
Transient Analysis of Rotor-Bearing Systems Using Component Mode Synthesis (81-GT-110) (A) **Je 112**
Transonic Flow Computations in Cascades Using Finite Element Method (81-GT-4) (A) **Je 104**
Tube Stresses in the Radiation Part of Solar Receivers and of Conventionally Fired Heaters (81-GT-200) (A) **Jl 89**
Turbine Pyrometry—An Equipment Manufacturer's View (81-GT-136) (A) **Jl 85**
Turbulence Characteristics in the Annulus-Wall Boundary Layer and Wake Mixing Region of a Compressor Rotor Exit (81-GT-145) (A) **Jl 85**
Twenty-Sixth International Gas Turbine Conference and Exhibit, review (NR) **My 61**
A UK View on Future Fuels (81-GT-87) (A) **Je 111**
Ultra-Lean Combustion at High Inlet Temperatures (81-GT-44) (A) **Je 107**
Unbalance Response of a Two-Spool Gas Turbine Engine with Squeeze Film Bearings (81-GT-219) (A) **Jl 90**
Use of Cascade and Small Turbine Tests to Determine Erosion of Utility Turbines (81-GT-52) (A) **Je 108**
The Use of Mathematical Modeling in the Analysis of Gas Turbine Compressor Unit Test Data (81-GT-217) (A) **Jl 91**
The Use of Multichannel Radio Telemetering Techniques for Stress and Temperature Measurements in Gas Turbine Rotating Components (81-GT-116) (A) **Je 112**
Use of a Tracer Gas Technique to Study Mixing in a Low Speed Turbine (81-GT-86) (A) **Je 111**
Using Microprocessors in Fault Monitoring of Aircraft Electronics (81-GT-138) (A) **Jl 86**
Utilization of Gas Turbine for District Heating Applications (81-GT-214) (A) **Jl 91**
The Venting Characteristics of a Fibrous Thermal Barrier System During a Rapid Depressurization Accident (Rotor Failure) in an HTGR-GT (81-GT-14) (A) **Je 105**
A Versatile Microprocessor Controller for Low-Cost Helicopter Applications (81-GT-137) (A) **Jl 85**
Water-Cooled Gas Turbine Forged Bucket Development (81-GT-174) (A) **Jl 88**
Water-Cooled Gas Turbine Monometallic Nozzle Fabrication and Testing (81-GT-162) (A) **Jl 87**
The Westinghouse 501D Combustion Turbine Engine (81-GT-32) (A) **Je 106**

Gas Wells
Application of Production Systems Analysis to Determine Completion Sensitivity on Gas Well Production (81-Pet-13) (A) **My 89**

Gaseous Fuel
Gas Turbine Materials Evaluation Program Utilizing Coal Derived Gaseous Fuel (81-GT-65) (A) **Je 109**

Gasification
Anthracite Vs Bituminous Coal Gasification (81-Pet-23) (A) **My 90**
Coal Gasification in Utah (ES) **Ag 21**
Gasification of Coal for Cooperative Industrial Use (81-IPC-Fu-1) (A) **D 101**
Mixing and Gasification of Coal in an Entrained Flow Gasifier (80-WA/HT-30) (A) **Ap 105**
Pyrolysis/Gasification (ES) **Ap 28**

Gasohol
The Future with Alcohol Fuels (ES) **S 24**
Gasohol—The Replaceable Fuel Source (IF) **Ap 66**

Gasoline
Fuel Facts (C) **Ja 49**

Gaugler, R. E. Some Modifications to, and Operational Experiences with, the Two-Dimensional, Finite-Difference, Boundary-Layer Code, STAN5 (81-GT-89) (A) **Je 111**

Gaul, L. Wave Transmission and Energy Dissipation of Structural and Machine Joints (81-DET-17) (A) **D 88**

Gauntner, D. J. Design and Development of the Combustor Inlet Diffuser for the NASA/GE Energy Efficient Engine (81-GT-129) (A) **Jl 84**

Gavane, S. S. Analysis and Synthesis of Mechanical Error in Cam-Follower Systems (80-DET-22) (A) **F 120**; Analysis and Synthesis of Mechanical Error in Geneva Mechanisms—A Stochastic Approach Part 1: External Geneva Mechanism (80-DET-24) (A) **F 120**; Part 2: Internal Geneva Mechanism (80-DET-25) (A) **F 120**

Gay, D. On a Finite Element Formulation of Dynamical Torsion of Beams Including Warping Inertia and Shear Deformation Due to Nonuniform Warping (81-DET-140) (A) **D 91**

Gayley, H. B. Field Testing and Laboratory Evaluation of Corrosion Cracking of Rotor Steels (81-JPGC-Pwr-29) (A) **N 113**

Gaylo, K. R. Energy Efficient Muffler for Reduction of Exhaust Noise Generated by a Pneumatic Grinder (80-WA/NC-9) (A) **F 124**

Gear, D. W. Mixed Convection in Rectangular Channel Flow with Smooth Surfaces and One Heated Wall (81-HT-6) (A) **S 88**

Gear Faults
A New Method of Modeling Gear Faults (81-DET-10) (A) **D 88**

Gear Mechanisms
On the Dynamic Gear Tooth Loading as Affected by Bearing Clearances in High-Speed Machinery (81-DET-112) (A) **D 91**

Gear Position
The Kinematics of Crossed Helical Gears (80-DET-37) (A) **F 121**

Gear Tooth Deflection
A Method of Selecting Grid Size to Account for Hertz Deformation in Finite Element Analysis of Spur Gears (81-DET-116) (A) **N 107**

Gear Tooth Failure
Investigation of the Failure of a Large Gearset (80-WA/DE-15) (A) **Ap 101**

Gear Transmission Systems
The Toroidal Drive **F 32**

Gear Wheels
Synthesis of an Epicyclic Gear Train for Path-Generation (80-DET-27) (A) **F 119**

Gears
Full-Flow Debris Monitoring in Gas Turbine Engines (81-GT-60) (A) **Je 109**
General Gear Diameter Equations for the Synthesis of Multi-Speed Gear Trains (81-DET-117) (A) **D 92**
Grinding Wheel Profile for Hob Relief Grinding (81-DET-113) (A) **D 91**
Vibration Analysis of a Large Naval Gear (81-DET-142) (A) **D 91**

Gearsets
Investigation of the Failure of a Large Gearset (80-WA/DE-15) (A) **Ap 101**

Gee, S. *(author)* Technology Transfer, Innovation and International Competitiveness (CB) **S 90**

Geers, T. L. Nonlinear Response of an Elastic Cylindrical Shell to a Transient Acoustic Wave (81-APM-10) (A) **S 84**

Geiling, D. W. Mechanical, Thermal and Hydraulic Design of a Composite Construction Water-Cooled Gas Turbine Nozzle (81-JPGC-GT-3) (A) **D 95**; Mechanical, Thermal and Hydraulic Design of a Monometallic Water-Cooled Gas Turbine Nozzle (81-HT-77) (A) **O 99**

General Electric Co.
Life Cycle Cost Before, During and After the Design of Aircraft Propulsion Systems (81-GT-111) (A) **Je 112**

Generalized Coordinates
The Generalized Coordinate Selection for the Dynamics of Complex Planar Mechanical Systems (80-DET-85) (A) **Mr 108**

Generating Electricity
The Uncertainties of OTEC (ES) **Mr 37**

Generating Mechanisms
Complex Number Synthesis of Four-Bar Path Generating Mechanisms Adjustable for Multiple Tangential Circular Arcs (80-DET-77) (A) **Mr 108**

Generating Systems
Economics of Electric Utility Power Generation (CB) **Ap 108**

Generator Sets
Gemini T-20G-8 XM1 Tank APU (81-GT-81) (A) **Je 110**

Generators
Coordinated Sootblowing—A Station Approach (81-JPGC-Fu-7) (A) **D 93**
Electrical Conductivity and Hall Parameter Measurements in Faraday MHD Generators (80-WA/HT-9) (A) **Ap 103**
Experimental Determination of Lateral Vibration of the 708 MVA Westinghouse Vertical Hydro Generators at Grand Coulee Dam, Washington (81-DET-70) (A) **N 106**
Fail-Safe Vibration Control Using Active Force Generators (81-DET-85) (A) **N 106**
Generator Monitoring System (81-JPGC-Pwr-23) (A) **N 112**
Hot Spot Detection in Generators with Optical Fibers (81-JPGC-Pwr-18) (A) **N 112**
Kaplan Turbine Named Landmark (NR) **Ap 74**
Operating on #6 Oil (ES) **N 71**
Superconducting Generators from Conception to Power Station **Ap 44**
Upgrading Old Generators (BTR) **Je 85**

Generic Requirements
Generic Waste Management Requirements for a Controlled Ecological Life Support System (81-ENAs-23) (A) **O 100**

Geneva Mechanisms
Optimization of High Speed Geneva Mechanisms (80-DET-56) (A) **Mr 107**

Gentle Handling
Gentle Handling Methods for Fragile Particulate Bulk (80-WA/MH-1) (A) **Ap 96**

Geologic Materials
An Equivalent Continuum Model for Fluid Flow, Heat and Mass Transport in Geologic Materials (81-HT-54) (A) **O 96**

Geometric Analysis
Geometric Analysis of Plane Mechanisms (80-DET-110) (A) **Mr 110**

Geometric-Mean Transmittance
A Simplified Approach to the Evaluation of the Geometric-Mean Transmittance and Absorptance for Gas Enclosures (81-HT-62) (A) **O 99**

Geometric Programming
Monotonicity in Goal and Geometric Programming (80-DET-48) (A) **Mr 106**
Optimization of Multipass Turning with Constraints (80-WA/Prod-22) (A) **My 83**
Optimum Stochastic Synthesis of Four-Bar Spatial Function Generators (80-DET-32) (A) **F 120**
Synthesis of Four-Bar Linkage for Position, Velocity and Acceleration Coordination by Geometric Programming (80-DET-80) (A) **Mr 108**

Geometric Structure
An Analytical and Experimental Investigation of the Heat Transfer Mechanisms within Fibrous Media Exposed to Solar Radiation (81-HT-41) (A) **O 96**

Geometry
On Linkages and Mobile Polyhedra (80-DET-30) (A) **F 120**

Geopressured Geothermal Resources
Gas-Turbine-Topped Hybrid Power Plants for the Utilization of Geopressured Geothermal Resources (81-Pet-5) (A) **My 88**
Geopressured Geothermal Sources
Wellbore Flow Characteristics for Optimal Energy Recovery from Gulf Coast Geopressured Geothermal Sources (81-Pet-18) (A) **My 90**
Geothermal Elecric Plant
Geothermal Comes to Nevada (ES) **Ag 20**
Geothermal Energy
Feasibility Study for the Use of Geothermal Energy at a Leggs' Hosiery Plant in New Mexico (81-Pet-8) **My 89**
Geothermal Energy: An Assessment **My 20**
Geothermal Energy: Its Past, Present and Future Contributions to the Energy Needs of Man (CB) **F 128**
Hot Dry Rock Geothermal (ES) **D 25**
The Prolific Geysers (ES) **O 26**
Sourcebook on the Production of Electricity from Geothermal Energy **O 107**
Geothermal Reservoir
Heat and Mass Transfer in a Fault-Controlled Geothermal Reservoir Charged at Constant Pressure (81-HT-52) (A) **O 97**
Geothermal Resources
Probing the Secrets of Vulcan (BTR) **Ja 53**
Geothermal Water
Wetlands May Clean Geothermal Water (BTR) **Jl 50**
Gerchow, F. Continuous Vacuum Pressure Systems (80-WA/MH-2) (A) **Ap 96**
Gerhart, P. M.
A Comparison of Two Alternative Methods for Defining Fan Performance (80-WA/PTC-1) (A) **Ap 101**; Engineering Education Goals (C) **F 48**
Gerisch, H. Thermal Accommodation Techniques for Payloads On-Board Spacelab (80-ENAs-20) (A) **Mr 112**
Gersch, H. M. NASA Gas Turbine Stator Vane Ring (81-GT-208) (A) **Jl 90**
Getter
Heat Switch Has No Moving Parts (BTR) **My 51**
Geysers
The Prolific Geysers (ES) **O 26**
Ghazi, M. Measurements of Effective Thermal Conductivity and Evaporative Heat Loss in Granular Porous Media (81-HT-58) (A) **O 98**
Ghia, K. N. Analysis and Asymptotic Solutions Compressible Turbulent Corner Flow (81-GT-149) (A) **Jl 86**
Giannovario, J. A. Experiment Operations in Spacelab (80-ENAs-40) (A) **Mr 113**
Giannuzzi, L. F. Optimization Design Considerations for Cogeneration Plants (81-JPGC-GT-7) (A) **D 95**; Optimization of Gas Turbine Cycles with Variable Number of Combustion, Compressor, and Inter-Cooler Stages (81-JPGC-GT-6) (A) **D 95**
Giansante, N. Model Analysis Using Helicopter Dynamic Test Data (81-DET-30) (A) **O 103**
Gibbs, R. T. Heat Transfer and Reaction Rate in Steam Gasification of Coal (80-WA/HT-14) (A) **Ap 104**
Gibson, J. N. Redesign and Replacement of Connecticut Yankee Moisture Separator/Reheater (MSR) Tube Bundles (81-JPGC-Pwr-2) (A) **N 110**
Gibson, R. W. *(author)* Japanese Scientific and Technical Literature: A Subject Guide (CB) **N 115**
Giese, J. Nature's Garbage Disposal? (C) **Ap 58**
Gilbert, J. Editor, Retiring (C) **N 73**
Gilbrech, D. A. Melting with a Heated Plate Under Contact Pressure-Variable Property Solution (80-WA/HT-7) (A) **Ap 103**
Giles, M. M. A Best Estimate Radiation Heat Transfer Model Developed for TRAC-BD1 (81-HT-68) (A) **O 98**
Gilson, P. H. Optimization of Gas Turbine Cycles with Variable Number of Combustion, Compressor, and Inter-Cooler Stages (81-JPGC-GT-6) (A) **D 95**
Given Box
A Quick Method for Testing if a Second Degree Polynomial Has Solutions in a Given Box (81-DET-118) (A) **N 108**
Glass-Reinforced Concrete
Glass-Reinforced Concrete for Solar Energy Devices (BTR) **S 51**
Glasses
Driving Bubbles Out of Glass (BTR) **Ag 45**
Glassford, A. P. M. A Thermal Analysis on the Deep Quest Life Support System (80-ENAs-30) (A) **Mr 113**
Glaub, J. C. Heat and Mass Transfer from a Moist Porous Media of Large Particle Size (81-HT-53) (A) **O 97**
Glavas, X. G. Fiber Optic Cables in the Ocean Environment (80-WA/OCE-6) (A) **Mr 118**
Global Analysis
An Unravelling Algorithm for Global Analysis of Dynamical Systems: An Application of Cell-to-Cell Mappings (80-WA/APM-27) (A) **Ja 101**
Global Climate
Response of the Global Climate to Changes in Atmospheric Chemical Composition Due to Fossil Fuel Burning (80-WA/HT-3) (A) **Ap 103**
Global Disaster
The Engineer's Conscience (CB) **N 116**
Global Oil Reserves
1981 Offshore Technology Conference, review (NR) **Ag 57**
Global Optimum
The Sensitivity Analysis of Cam Mechanism Dynamics (80-DET-93) (A) **Mr 109**
Global Solar Systems
Energy Sufficiency in 2030—At What Price? (NR) **My 56**
Global Stiffness
Finite-Element Solution of Elastic-Plastic Boundary—Value Problems (81-APM-17) (A) **S 84**
Global Temperature
NASA Detects Changes in Sun's Energy Output (BTR) **Ja 58**
Global Warming
Impact of a Global Warming on Biospheric Sources of Methane and its Climatic Consequences (80-WA/HT-2) (A) **Ap 103**
Glucose
Getting the Most Out of Biomass (ES) **N 71**
Gmeindl, F. Fracture Mechanics Model for Pittsburgh Coal (81-Pet-16) (A) **My 90**
GMSOLID
Computer Graphics Speeds Car Component Design (BTR) **Ag 46**
Goal Programming
Monotonicity in Goal and Geometric Programming (80-DET-48) (A) **Mr 106**
Goals Program
Engineering Ethics: A Precondition for Survival (STV) **Ag 71**
Goenka, P. K. Dynamic Analysis of Rocking Journal Bearings with Multiple Offset Segments (81-Lub-34) (A) **D 98**; Effect of Surface Ellipticity on Dynamically Loaded Cylindrical Bearings (81-Lub-1) (A) **D 96**
Goglia, G. L. Elections to Fellow Grade **Ap 90**
Goland, M. Editor, Retiring (C) **N 72**
Gold Mining
Gold Mining in New Guinea (BTR) **N 76**
Gold Surfaces
Steam Condensation on Various Gold Surfaces (81-HT-15) (A) **O 94**
Goldhar, J. L. *(editor)* Management of Research and Innovation (Studies in the Management Sciences) (CB) **S 90**
Goldschmidt, V. W. The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-13) (A) **My 86**; Effects of Nozzle Exit Turbulence on the Spreading (or Widening) Rate of Plane Free Jets (81-FE-22) (A) **S 82**
Goldstein, R. J. The Influence of a Laminar Boundary Layer and Laminar Injection on Film Cooling Performance (81-HT-38) (A) **O 96**
Goodger, E. M. Radiation and Smoke from the Gas Turbine Combustor Using Heavy Fuels (81-HT-21) (A) **O 94**
Goodling, J. S. Economic Analysis and Optimization of Solar Residential Space Heating (80-WA/Sol-11) (A) **Ap 93**
Goodman, D. L. Real-Time Vibration Rate Acquisition and Signal Processing Using a Low-Cost Microcomputer (81-DET-28) (A) **O 103**
Goodsell, G. G. Speaking of St. . . (C) **Ag 42**
Gordon, R. M. The Engineer as Information Manager (C) **F 46**
Goria, R. S. R. Heat Transfer in a Periodic Boundary Layer Near an Axisymmetric Stagnation Point on a Circular Cylinder (81-GT-92) (A) **Je 112**
Gorman, D. N. Conceptual Design of an Advanced Water/Steam Receiver for a Solar Thermal Central Power System (81-Sol-5) (A) **S 80**
Gorton, R. L. Elections to Fellow Grade **D 87**
Gossip Items
The Human Side of Engineering (C) **D 56**
Gostelow, J. P. The Present Role of High Speed Cascade Testing (81-GT-95) (A) **Je 111**
Goswami, T. K. Comparison of Several Models for Long-Term Monthly Average Daily Insolation and Horizontal Surfaces and the Estimation of Horizontal Surface Insolation for 16 U.S. Locations (80-WA/Sol-28) (A) **Ap 94**
Gottlieb, M. Hot Spot Detection in Generators with Optical Fibers (81-JPGC-Pwr-18) (A) **N 112**
Gould, R. W. Failure Analysis and Expert Witness for Products Liability—A Responsibility for the Engineering Profession (80-WA/Mgt-6) (A) **Ja 103**
Gouse, S. W., Jr. Elections to Fellow Grade **O 92**
Governing
Diesel Engine Governing with Load Feedback (81-DGP-5) (A) **My 88**
Government Funding
R&D Funding Increased Slightly for '81 (NR) **F 64**
Government Meddling
Keeping America Free (C) **S 49**
Government Programs
Storm Over S-T View (C) **Ja 52**
Government Regulations
Transportation Bottlenecks (ES) **F 22**
Government Regulators
The Need to Train Regulators (C) **Je 62**
Government Spending
The Budget Blooms (WW) **My 74**
Goyal, A. Evaluation of Advanced Combustors for Dry NO_x Suppression with Nitrogen Bearing Fuels in Utility and Industrial Gas Turbines (81-GT-125) (A) **Je 113**
Goyal, K. P. Heat and Mass Transfer in a Fault-Controlled Geothermal Reservoir Charged at Constant Pressure (81-HT-52) (A) **O 97**
Grabowski, W. V. High Effectiveness Recuperator for Waste Heat Recovery Applications (80-WA/HT-15) (A) **Ap 104**
Grading Beef
Grading Beef by Ultrasound (BTR) **Jl 54**
Graduate Engineers
Placement of Engineering and Technology Graduates (EN) **Mr 82**
Graduate Program
KU-NASA Program Offers Research Incentives (EN) **My 70**
Graduate Schools
Graduate-School Incentives Costly (C) **S 49**
Make Grad School More Attractive (C) **Jl 46**
Graduate Study
Education Issues (C) **Ap 54**
Minorities in Engineering (EN) **O 85**
1981 Research Directory (EN) **S 73**
Graduate Work
Graduate Research Program for Women (EN) **Mr 82**
Graduates
Effect of Reduced Federal Aid to Students (EN) **D 79**
Job Changing and Income (EN) **Ap 82**
Graham, L. J. Acoustic Emission Monitoring of Steam Turbines (81-JPGC-Pwr-16) (A) **Ni 111**
Graham, R. W. Analysis for Predicting Adiabatic Wall Temperatures with Single Hole Coolant Injection into a Low Speed Crossflow (81-GT-91) (A) **Je 111**
Grain Flow Orientation
Effect of Grain Flow Orientation on Rolling Contact Fatigue Life of AISI M-50 (81-Lub-57) (A) **D 100**
Gramm-Latta
Budget Reconciliation (WW) **Ag 70**
Grantham, W. J. Estimating Reachability Boundaries for Resource Management Systems (80-WA/DSC-5) (A) **Mr 114**
Granular Porous Media
Measurements of Effective Thermal Conductivity and Evaporative Heat Loss in Granular Porous Media (81-HT-58) (A) **O 98**

Granulated Slag
Slag Heat Recovery System (IF) **F 61**
Granville, P. S. Drag-Characterization Method for Arbitrarily Rough Surfaces by Means of Rotating Disks (81-FE-33) (A) **S 83**
Graphics
A CAD/CAM Graphics System with Relative Datums and Tolerances (81-DET-108) (A) **N 107**
A Microprocessor-Based Interactive Beam Analysis Program with Graphics—Dynamic and Static (81-DE-12) (A) **Ag 78**
Graphs
A Generalized Torsion Spring Design Method—A Further Refinement (81-DET-5) (A) **F 119**
Gravimetric Weighfeeders
Conveyor Belt Scales and Gravimetric Weighfeeders—An Evolution (80-JPGC-Pwr-11) (A) **D 92**
Graviss, K. A Note on Critical-Speed Solutions for Finite-Element-Based Rotor Models (81-DET-50) (A) **N 105**
Gravitational Force
Metric Meditations (C) **Ag 42**
Gravity
The Effect of Gravity on Certain Curved Channel Potential Flows (81-FE-19) (A) **S 82**
Gravity Loading
Boussinesq-Papkovich Functions for Creep Around a Spherical Cavity or a Rigid Inclusion in a Gravity-Loaded Half Space (81-APM-30) (A) **S 85**
Gravity Roller Conveyors
Improving Conveyor Performance (IF) **S 58**
Gray, M. A. The Effects of a Volatile Fireside Manganese Additive on Coal-Fired Utility Boiler Operation (80-JPGC/Fu-4) (A) **Ja 98**
Gray, S. Development of Foil Journal Bearings for High Load Capacity and High Speed Whirl Stability (81-Lub-36) (A) **D 98**
Gray Gases
Evaluation of Coefficients for the Weighted Sum of Gray Gases Model (81-HT-55) (A) **O 97**
A Mixed Gray-Gas Model to Calculate Water Vapor Standard Emissivities (81-HT-63) (A) **O 97**
Gray Planar Medium
Heat Transfer by Conduction and Radiation in One-Dimensional Planar Medium Using the Differential Approximation (81-HT-72) (A) **O 98**
Greaney, P. K. An Experimental and Analytical Investigation of Boiling Heat Transfer in Porous Bodies (81-HT-44) (A) **O 97**
Greco, L. The Navy PATE Program (81-GT-189) (A) **Jl 88**
Green, N. B. *(author)* Earthquake-Resistant Building Design and Construction, 2nd Ed. (CB) **N 115**
Greenhill, L. M. Iterative Determination of Squeeze Film Damper Eccentricity for Flexible Rotor Systems (81-DET-87) (A) **D 90**
Greenley, D. R. Advanced Microbial Check Valve Development (81-ENAs-45) (A) **S 88**
Greeven, M. A Solar Receiver For a 25-kW(e) Gas Turbine **Ja 26**
Gregoric, M. An Experimental Investigation of Merging Buoyant Jets in a Crossflow (80-WA/HT-23) (A) **Ap 105**
Gregory, A. H. A Thousand Pardons (C) **Je 62**
Gregory, N. Optimization of the HHT-1640 MW(th) Demonstration Nuclear Power Plant (HHT-Project) (81-GT-13) (A) **Je 105**
Gregory, R. S. A Comparison of Tilting Pad Thrust Bearing Lubricant Supply Methods (81-Lub-8) (A) **D 96**
Greif, R. Analysis of Wheel Rail Force and Flange Force During Steady-State Curving of Rigid Trucks (81-RT-5) (A) **Ag 78**
Greitzer, E. M. A Simple Method for Compressor Stall Cell Propagation (81-GT-73) (A) **Je 110**
Grevstad, P. E. A Baseload Gas Turbine to Meet Utility Requirements for Reliability and Availability (81-GT-127) (A) **Jl 84**
Grid Size
A Method of Selecting Grid Size to Account for Hertz Deformation in Finite Element Analysis of Spur Gears (81-DET-116) (A) **N 107**
Grid Spacers
Heat Transfer Augmentation in Rod Bundles Near Grid Spacers (80-WA/HT-62) (A) **My 84**
Grief, R. Predictions of Drop Models for the Dispersed Flow Downstream of the Quench Front in Tube Reflood Experiments (80-WA/HT-47) (A) **Ap 106**
Griffin, D. S. Elections to Fellow Grade **Mr 103**
Griffin, J. N. The Simultaneous Analytical Synthesis of Mass and Spring Elements in Planar Mechanisms (80-DET-50) (A) **Mr 106**
Griffin, O. M. Universal Similarity in the Wakes of Stationary and Vibrating Bluff Structures (80-WA/FE-4) (A) **My 85**
Griffith, P. Elections to Fellow Grade **N 103**
Grinders
Rotor Blade Tip Grinder (IF) **O 64**
Grinding
Adaptive Control Optimization of Grinding (80-WA/Prod-12) (A) **My 82**
Grinding Wheel Profile for Hob Relief Grinding (81-DET-113) (A) **D 91**
The Role of Wheel-Work Deflection in Grinding Operations (80-WA/Prod-11) (A) **My 82**
Grinding Booth
Predicting Trajectories and Concentrations of Particles in a Grinding Booth (81-FE-23) (A) **S 82**
Gripp, L. P. An LNG Carrier Adjustable Speed Gas Turbine Electric Propulsion System (81-GT-112) (A) **Je 113**
Grissom, W. M. Education Issues (C) **Ap 54**
Griswold, H. R. EVA Equipment for Satellite Service (80-ENAs-48) (A) **Mr 114; Je 40**
Groghan, D. A. Development of FT9 Marine Gas Turbine (81-GT-197) (A) **Jl 89**
Groll, D. S. Expanded Socio-Technical Outlook Urged (C) **Ap 55**
Grollius, H. The Influence of Blade Number Ratio and Blade Row Spacing on Axial-Flow Compressor Stator Blade Dynamic Load and Stage Sound Pressure Level (81-GT-165) (A) **Jl 87**
Grooves
Grooves Reduce Aircraft Drag (BTR) **Mr 71**
Grosser, M. *(author)* Gossamer Odyssey: The Triumph of Human-Powered Flight (CB) **Ag 84**
Grosshandler, W. L. On the Spectral Emissivity of Pulverized Coal and Char (81-HT-23) (A) **O 94**
Ground-Coupled Storage
Thermal and Economic Assessment of Ground-Coupled Storage for Residential Solar Heat Pump Systems (80-WA/Sol-10) (A) **Ap 93**
Groundwater
Heat Pumps in Texas (ES) **F 22**
Grover, G. K. Dynamics of Coupled Fluid-Structure Multiplate Systems (81-DET-145) (A) **D 91**
Grover, J. L. Significance of Centerline Lack-of-Penetration Defects in Double Seam-Welded SA-312 Pipe (81-PVP-33) (A) **Ag 81**
Groves, T. K. Potential Flow Solution for Two Obliquely Impinging Two-Dimensional Plane Jets of Different Stagnation Pressures (81-FE-18) (A) **S 81**
Gruber, H. Operational Experience with Large Steam Turbines in Nuclear Power Plants (80-JPGC/Pwr-4) (A) **F 116**
Gruen, M. J. Continuous Condenser Tube Cleaning—An Update (81-JPGC-Pwr-13) (A) **N 111**
Grush, W. H. Results and Predictions of Scaled, Nuclear Large Break Loss-of-Coolant Experiments (80-WA/HT-49) (A) **Ap 106**
Gugelev, B. M. Some Technological Problems Associated with the Manufacture of Blades and Vanes for Stationary Gas Turbines in the USSR (81-GT-173) (A) **Jl 88**
Guideways
Suspension Bounce Response of Canadian Maglev Vehicle Under Guideway Excitations, Part I: Deterministic Analysis (81-DET-81) (A) **D 90**; Part II: Stochastic Modeling and Analysis (81-DET-82) (A) **D 90**
Guillotine Breaks
A PWR Secondary System Behavior for Postulated Pipe Rupture (80-WA/NE-1) (A) **Ja 96**
Gulf Stream
Climate Clues from Ocean Depths (BTR) **My 47**
Gulfslik Computer System
Fate and Threat of Oil Slicks in the Arabian Gulf (80-ENAs-10) (A) **Mr 111**
Gunter, E. J. Comparison of the Unbalance Responses of Jeffcott Rotors with Shaft Bow and Shaft Runout (81-DET-47) (A) **D 89**; Component Mode Synthesis of Large Rotor Systems (81-GT-147) (A) **Jl 85**; A Study of the Modal Truncation Error in the Component Mode Analysis of a Dual-Rotor System (81-GT-144) (A) **Jl 84**; Unbalance Response of a Two-Spool Gas Turbine Engine with Squeeze Film Bearings (81-GT-219) (A) **Jl 90**
Guntur, R. R. Fail-Safe Vibration Control Using Active Force Generators (81-DET-85) (A) **N 106**
Guppy, J. G. An Analysis of the Steady-Power Natural Circulation Experiments in LMFBR Plants (80-WA/HT-41) (A) **Ap 106**
Gupta, K. C. Design Considerations for Manipulator Workspace (81-DET-79) (A) **D 90**; Design and Evaluation of Drag-Link Driven Cams (80-DET-38) (A) **F 121**
Gupta, K. N. A Numerical Approach to the Stability of Rotor-Bearing Systems (81-DET-61) (A) **D 90**; Vibration Analysis of a Flexible System Mounted on a Viscoelastic Sandwich Beam (81-DET-64) (A) **N 106**
Gupta, S. C. Stability of Developing Flow in a Pipe—Nonparallel Effects (81-APM-13) (A) **S 84**
Gupta, S. M. Machining Parameter Optimization for Multistation Synchronous Machines (80-DET-60) (A) **Mr 107**
Gutierrez, R. H. Evaluation of Eigenvalues in Regions of Complicated Boundary Shape in Problems Governed by Helmholtz Equation (81-DET-76) (A) **O 105**; Vibrations of Rectangular Plates With Nonuniform Elastic Edge Supports (80-WA/APM-28) (A) **Ja 102**
Gutman, Y. I. Analysis and Synthesis of a Three-Link Linkage with an Intermediate Higher Kinematic Pair (80-DET-94) (A) **Mr 109**; Methods of Optimization for Non-Linear Problems (80-DET-65) (A) **Mr 107**
Guttalu, R. S. An Unravelling Algorithm for Global Analysis of Dynamical Systems: An Application of Cell-to-Cell Mappings (80-WA/APM-27) (A) **Ja 101**
Gypsum
The Technical/Economic Issues and Reliability Requirements for Tampa Electric Company's Big Bend Unit #4 FGD System (81-JPGC-Pwr-35) (A) **D 93**
Gypsy Moth
Monitoring the Gypsy Moth (BTR) **Ja 55**
Gyroscopic Forces
Forces on Turbine Blades Studied (EN) **Mr 83**

H

Haas, L. L. Making Large Spiral Bevel and Hypoid Gears **Ag 34**
Haboush, A. L. Elections to Fellow Grade **Ag 74**
Hack, R. H. An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) (A) **Je 106**
Hafkemeyer, H. P. Aspects of Thermal Control Analysis of Spacelab (80-ENAs-12) (A) **Mr 111**; Pre- and Post-Test Analysis for Spacelab Thermal System Test, Derivation of Tolerance and Comparison with Test Results (81-ENAs-18) (A) **S 37**
Hagan, J. W. Operational Safety at the FFTF (81-JPGC-NE-6) (A) **N 109**
Haines, R. S. On Predicting Vibrations in Realistically Proportioned Linkage Mechanisms (80-DET-4) (A) **F 118**
Halal, M. B. An Integral Equation Approach to Radiative Heat Transfer Between Heat Conducting Solids of Arbitrary Shape (81-HT-73) (A) **O 98**
Hall, A. S. Linkage Characteristic Polynomials: Assembly Theorems, Uniqueness (80-DET-9) (A) **F 118**; Linkage Characteristic Polynomials: Definitions, Coefficients by Inspection (80-DET-8) (A) **Mr 106**
Hall, M. Cogeneration: The Promise is Now **Ag 22**
Hall, R. E. Performance and Air Pollutant Emissions of an Experimental Water/Residual Oil Emulsion Burner in a Commercial Boiler (80-WA/APC-1) (A) **Ap 102**
Hall of Fame
MacCready Inducted into Inventors Hall of Fame (NB) **Mr 81**

Hall Parameter
Electrical Conductivity and Hall Parameter Measurements in Faraday MHD Generators (80-WA/HT-9) (A) **Ap 103**
Halle, H. Flow-Induced Tube Vibration Tests of Typical Industrial Heat Exchanger Configurations (81-DET-37) (A) **O 104**
Halling, J. Toward a Mechanical Wear Equation (81-Lub-5) (A) **D 96**
Hamburger, C. L. Wellbore Flow Characteristics for Optimal Energy Recovery from Gulf Coast Geopressured Geothermal Sources (81-Pet-18) (A) **My 90**
Hamed, A. Improved Particle Trajectory Calculations Through Turbomachinery Affected by Coal Ash Particles (81-GT-53) (A) **Je 108**
Hameed, S. Impact of a Global Warming on Biospheric Sources of Methane and its Climatic Consequences (80-WA/HT-2) (A) **Ap 103**; Response of the Global Climate to Changes in Atmospheric Chemical Composition Due to Fossil Fuel Burning (80-WA/HT-3) (A) **Ap 103**
Hamilton, S. The Partial Coal Gasification Combined Cycle Power Plant (81-JPGC-GT-2) (A) **D 95**
Hamilton, W. *(author)* Electric Automobiles: Energy, Environmental, and Economic Prospects for the Future (CB) **Ja 104**
Hamilton's Principle
Kineto-Elastodynamic Analysis of Mechanisms by Finite Element Formulations (80-DET-103) (A) **Mr 110**
Hamm, J. R. Storm Over S-T View (C) **Ja 52**
Hammers
Effects of Process Parameters on Hammer Noise (81-DET-95) (A) **N 106**
Sources of Noise Produced During Pneumatic Chipping Hammer Operation (80-WA/NC-11) (A) **F 124**
Hammond, D. C., Jr. Diagnostic Measurements of Fuel Spray Dispersion (80-WA/HT-35) (A) **Ap 105**
Hammond, J. K. Nonstationary Response of Vehicles on Rough Ground—A State Space Approach (80-WA/DSC-22) (A) **Mr 116**
Hamrock, B. J. Analysis of Starvation Effects on Hydrodynamic Lubrication in Nonconforming Contacts (81-Lub-52) (A) **D 100**; Effect of Surface Roughness on Elastohydrodynamic Line Contact (81-Lub-23) (A) **D 98**; Simplified Solution for Stresses and Deformations (81-Lub-54) (A) **D 100**
Han, T. Y. The Study of Sluice Gate and Sharp-Crested Weir Through Hodograph Transformations (81-APM-23) (A) **S 85**
Hanafi, A. An Analytical Examination of the Behavior of Oil Sand Fragments in Heated Streams (80-WA/HT-33) (A) **Ap 105**
Hand Size
Design Considerations for Manipulator Workspace (81-DET-79) (A) **D 90**
Handa, T. Smoke Filling in an Enclosure (81-HT-8) (A) **S 89**
Handicapped
Doorstop for the Handicapped (BTR) **D 59**
Technology for the Handicapped (NB) **Jl 79**
Handling Management
Unit Handling—Problems and Opportunities (80-WA/MH-7) (A) **Ap 96**
Handling Systems
Development, Testing and Field Use of a Specialty Electro-Mechanical, Contra-Helical Steel Strength Member Cable (80-WA/OCE-7) (A) **Ap 97**
Hands-On Experience
New Venture in Engineering Education (EN) **Je 92**
Hands-On Metric Learning
Kids Teach Parents Metrics (NB) **S 70**
Hanover Fair
Hanover Fair: A New Concept (IF) **Ja 66**
Hansen, B. D., III Generic Waste Management Requirements for a Controlled Ecological Life Support System (81-ENAs-23) (A) **O 100**
Hansen, D. A. Specifying Linepipe Suitable for Safe Operation in Sour Wet Service (81-Pet-1) (A) **My 88**
Hansen, J. E. Linear Prediction Theory for Digital Simulation of Sea Waves (81-Pet-7) (A) **My 89**
Hansen, K. E. Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) (A) **Ag 82**
Hanseth, E. J. High Temperature Solar Thermal Technology (80-WA/Sol-20) (A) **Ap 94**
Hanson, R. G. Experimental Determination of Lower Plenum ECC Injection Effectiveness (80-WA/HT-60) (A) **My 84**
Hard Technologists
Storm Over S-T View (C) **Ja 52**
Hardenable Materials
Hardenable Spring Alloys (IF) **S 59**
Hardening
Doomsday + 1 (BTR) **Mr 68**
Hardin, L. W. An Investigation of Axial Compressor Rotor Aerodynamics (81-GT-56) (A) **Je 108**
Hardwood Forests
Monitoring the Gypsy Moth (BTR) **Ja 55**
Harklerod, M. An Experimental Study of Upper Hot Layer Stratification in Full-Scale Multiroom Fire Senarios (81-HT-9) (A) **S 89**
Harmonic Base Excitation
An Efficient Technique for the Approximate Analysis of Vibro-Impact (81-DET-16) (A) **N 104**
Harmonic Signals
An Appraisal of Schroeder-Phased Harmonic Signals for Bearing Identification (80-WA/DSC-34) (A) **Mr 116**
Harmonic Wave Propagation
Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plain Strain, Numerical Results (80-WA/APM-3) (A) **Ja 99**
Harrell, J. P. Connection Force Analysis of Mechanisms Described by Explicit Equations of Motion in Generalized Coordinates (80-DET-75) (A) **Mr 108**
Harris, A. B. Professional Courtesy Needed (C) **Jl 46**
Harris, I. PWR S/RV Line Qualification to Gas Discharge Conditions (81-PVP-41) (A) **Ag 82**
Harrison, R. F. Nonstationary Response of Vehicles on Rough Ground—A State Space Approach (80-WA/DSC-22) (A) **Mr 116**
Harsha, P. T. Multiple-Scale Turbulence Modeling of Free Turbulent Flows (81-FE-20) (A) **S 82**
Harshvardhan 11.5 Micron Emission from Smoke Computed Using Finite Cloud Geometry (80-WA/HT-1) (A) **Ap 103**
Hart, F. D. Analysis of Fly-Shuttle Loom Noise by Multi-Channel Digital Signal Processing Techniques (81-DET-100) (A) **N 106**
Hartley, J. G. Transient Simultaneous Heat and Mass Transfer in Moist, Unsaturated Soils (81-HT-50) (A) **O 97**
Hartman, P. J. Moored Systems Designed to Sense Deep Ocean Earthquakes (80-WA/OCE-10) (A) **Ap 98**; Performance Evaluation of Buoy Shapes for Deep Ocean Systems (80-WA/OCE-12) (A) **Ap 97**
Hartung, J. R. Direct Reactor Auxiliary Cooling System for the 1000-MWe LMFBR Developmental Plant (81-JPGC-NE-7) (A) **N 109**
Harvard Business School Study
Storm Over S-T View (C) **Ja 51**
Harvego, E. A. An Investigation of Small Break Loss-of-Coolant Phenomena in a Small Scale Non-nuclear Test Facility (80-WA/NE-1) (A) **Ja 96**
Harvey, J. W. Kineto-Elastodynamic Analysis of Mechanisms by Finite Element Formulations (80-DET-103) (A) **Mr 110**
Harwell, W. The Thermal Canister Approach to Instrument Thermal Design (80-ENAs-23) (A) **Mr 112**
Haselden, G. G. The Challenge of LNG in the 1980s **Mr 46**
Hashimoto, K. Embrittlement of 1 1/4 Cr-1/2 Mo Steels in High-Temperature Service (81-Mat-3) (A) **O 102**
Hashimoto, M. Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part 1: Plain Milling with a Single-Toothed Helical Cutter (80-WA/Prod-4) (A) **My 82**; Part 2: Plain Milling with a Multitoothed Helical Cutter (80-WA/Prod-5) (A) **My 82**
Hashish, E. Finite Journal Bearing with Nonlinear Stiffness and Damping. Part 1: Improved Mathematical Models (81-DET-51) (A) **D 89**; Part 2: Stability Analysis (81-DET-52) (A) **N 105**
Hastings, G. A. Coal-Fired Heaters for CCGT Cogeneration Service (81-GT-212) (A) **Jl 80**
Hatsopoulos, G. N. Engineer, Entrepreneur, Economist—All in One! **D 36**
Haug, E. J. Design Sensitivity Analysis of Planar Mechanism and Machine Dynamics (80-DET-6) (A) **F 119**; Dynamic Analysis of Mechanical Systems with Intermittent Motion (81-DET-48) (A) **N 105**; A Logical Function Method for Dynamic and Design Sensitivity Analysis of Mechanical Systems with Intermittent Motion (80-DET-39) (A) **F 121**; A State Space Method for Kinematic Optimization of Mechanisms and Machines (80-DET-43) (A) **F 121**
Hauschildt, M. R. An LNG Carrier Adjustable Speed Gas Turbine Electric Propulsion System (81-GT-112) (A) **Je 113**
Hause, A. Measurement of Heat Flux and Pressure in a Turbine Stage (81-GT-88) (A) **Je 111**
Hawkins, L. W. Materials Exposure Test Facilities for Varying Low-Btu Coal-Derived Gas (81-GT-170) (A) **Jl 87**
Hawks
Hawk and Man: An Ecological Equilibrium (NB) **O 76**
Hawthorne, K. L. Progress in Railway Mechanical Engineering (1979-1980 Report of Survey Committee)—Cars and Equipment (80-WA/RT-11) (A) **F 126**
Hay, E. Rubber Lined Pipelines—An Overview (80-WA/MH-8) (A) **Ap 96**
Hayashi, K. On Branched, Interface Cracks (81-APM-20) (A) **S 84**
Hayden, M. L. Moisture Transfer in Concrete Pavements (81-HT-32) (A) **O 96**
Hazard, H. R. The Potential for Use of Peat Blends with Coal for Electric Power Generation (81-JPGC-Fu-2) (A) **D 93**
Hazardous Materials
Toxicology Program (EN) **Je 91**
Hazardous Waste Disposal
Regional Facilities for Hazardous Waste Disposal (80-WA/MH-13) (A) **Ap 97**
Hazardous Wastes
Hazardous Waste Management (BTR) **Mr 70**
Hazzard, H. I. Wanted: More Technical Reading Matter (C) **S 49**
Headcount
Management Wrinkles **O 80**
Health Care Facilities
Symposium on Hospital Energy Management, preview (NR) **Mr 79**
Health Study
Diesel Exhaust Health Study (BTR) **Mr 72**
Hearing Aids
International Hearing Aid Agreement (BTR) **S 54**
Hearing Conservation Program
Industrial Noise Pollution—Part 4: An Effective Hearing Conservation Program **O 31**
Hearing Loss
Industrial Noise Pollution—Part 1: The Nature and Extent of the Problem **Jl 34**
Heat Balance
On Heat Balance in Coal-Fired MHD Systems, Channel Heat Transfer and Electrode Temperature Distribution (80-WA/HT-11) (A) **Ap 103**
Heat Conducting Solids
An Integral Equation Approach to Radiative Heat Transfer Between Heat Conducting Solids of Arbitrary Shape (81-HT-73) (A) **O 98**
Heat Conduction
Enhanced Heat Conduction in Phase-Change Thermal Energy Storage Devices (80-WA/HT-45) (A) **Ap 106**
Heat Exchangers
Bond Graph Structural Models for Heat Exchangers (80-WA/Sol-17) (A) **Ap 94**
Geothermal Comes to Nevada (ES) **Ag 20**
Heat Exchanger Applications During TMI-2 Post-Accident Cooldown (81-JPGC-NE-9) (A) **N 110**
A Heat Exchanger Computational Procedure for Temperature-Dependent Fouling (81-HT-75) (A) **O 98**
Industrial Waste Heat Recovery (80-WA/HT-17) (A) **Ap 104**
Pressure Drops and Heat Transfer in a Double Helix Heat Exchanger (80-WA/HT-38) (A) **Ap 106**
Primary Loop Heat Exchanger for HTGR Plant Residual Heat Removal and Auxiliary Cooling System (81-JPGC-NE-10) (A) **N 110**

Shell-and-Tube Heat Exchanger Failures in Feedwater Heaters, Condensers, and Other Heat Exchangers (81-JPGC-Pwr-1) (A) **N 110**

Heat Flow

Data Acquisition System for Thermal Stress Studies (80-WA/OCE-14) (A) **Ap 98**

Heat Flux

Forced Convective Post-CHF Heat Transfer and Quenching (80-WA/HT-69) (A) **My 85**

Measurement of Heat Flux and Pressure in a Turbine Stage (81-GT-88) (A) **Je 111**

MHD Electrode Performance; Heat Transfer and Voltage Drop (80-WA/HT-10) (A) **Ap 104**

Radiative Heat Transfer in Fibrous Insulations—Part I: Analytical Study (81-HT-42) (A) **O 96**; Part II: Experimental Study (81-HT-43) (A) **O 97**

Results and Predictions of Scaled, Nuclear Large Break Loss-of-Coolant Experiments (80-WA/HT-49) (A) **Ap 106**

Heat Pipes

Development and Operational Testing of a Heat Pipe Dry Cooling Tower (80-JPGC/Pwr-22) (A) **F 118**

Heat Pipe Avionic Thermal Control Systems (80-ENAs-4) (A) **Mr 111**

Heat Pipe Blocks Return Flow (BTR) **O 59**

Quick-Response Heat Pipe (IF) **Ji 61**

The Thermal Canister Approach to Instrument Thermal Design (80-ENAs-23) (A) **Mr 112**

Heat Pumps

Analysis of Two-Phase Flow Solar Collectors with Application to Heat Pumps (80-WA/Sol-32) (A) **Ap 94**

Design Procedure and Applications of Solar-Assisted Series Heat Pump Systems (80-WA/Sol-9) (A) **Ap 93**

Heat Pump Water Heaters (ES) **Ap 29**

Heat Pumps in Texas (ES) **F 22**

The Parallel Heat Pump and Photovoltaic Heating and Cooling—Phase II (80-WA/Sol-40) (A) **Ap 95**

Thermal and Economic Assessment of Ground-Coupled Storage for Residential Solar Heat Pump Systems (80-WA/Sol-10) (A) **Ap 93**

Heat Rate

A Simplified ASME Acceptance Test Procedure for Steam Turbines (80-JPGC/Pwr-15) (A) **F 117**

Heat Recovery

Experience with the Heating Plant Heat Recovery System at The University of New Mexico (80-WA/HT-16) (A) **Ap 104**

Heat Rejection

Thermal Vacuum Testing of Flexible Radiator Systems (81-ENAs-46) (A) **S 88**

Heat Removal

Primary Loop Heat Exchanger for HTGR Plant Residual Heat Removal and Auxiliary Cooling System (81-JPGC-NE-10) (A) **N 110**

Heat Shielding

Galileo Probe Forebody Entry Thermal Protection: Aerothermal Environments and Heat Shielding Requirements (80-ENAs-24) (A) **Mr 112**

Heat Storage

Thermal Energy Storage and Regeneration (CB) **Ag 85**

Heat Transfer

The Adhesion of Ice to Low Energy Solids (80-WA/HT-19) (A) **Ap 104**

Analysis and Design of Hybrid Double-Absorption Cooling Systems for Low Grade Thermal Energy Applications (80-WA/HT-44) (A) **Ap 106**

Analysis of Heat and Mass Transfer Within a Sheet of Papermaking Fibers During Drying (81-HT-49) (A) **O 97**

Analysis of JP-4 Fire Test Data and Development of a Simple Fire Model (81-HT-17) (A) **O 94**

Analysis of Laminar Forced Convection Heat Transfer in the Entrance Region of a Flat Duct with Uniform Wall Temperature (81-HT-29) (A) **O 95**

An Analysis of the Steady-Power Natural Circulation Experiments in LMFBR Plants (80-WA/HT-41) (A) **Ap 106**

An Analysis of the Thermal Fixation of Pilings (80-WA/HT-6) (A) **Ap 103**

An Analytical Examination of the Behavior of Oil Sand Fragments in Heated Streams (80-WA/HT-33) (A) **Ap 105**

An Analytical and Experimental Investigation of the Heat Transfer Mechanisms within Fibrous Media Exposed to Solar Radiation (81-HT-41) (A) **O 96**

Application of the Integral Method to Two-Dimensional Transient Heat Conduction Problems (80-WA/HT-55) (A) **My 84**

An Application of the Optical Correlation Computer to the Detection of the Malkus Transitions in Free Convection (80-WA/HT-27) (A) **Ap 105**

Arrays of Impinging Jets With Spent Fluid Removal Through Vent Holes on the Target Surface, Part 2: Local Heat Transfer (81-HT-76) (A) **O 99**

The Asymptotic Structure of Counterflow Premixed Flame for Large Activation Energies (81-HT-22) (A) **O 94**

A Best Estimate Radiation Heat Transfer Model Developed for TRAC-BD1 (81-HT-68) (A) **O 98**

Brine Channel Enlargement in Sea Ice During Spring Thaw (80-WA/HT-18) (A) **Ap 104**

Buoyancy Effects on a Boundary Layer Along an Infinite Vertical Cylinder with a Step Change of Surface Temperature (80-WA/HT-25) (A) **Ap 104**

Burning Rates of Linear Fuel Droplet Arrays (80-WA/HT-34) (A) **Ap 105**

The Calculation of a Fire in a Large Building (81-HT-2) (A) **S 88**

Can Magnetic Refrigerators Liquefy Hydrogen at High Efficiency? (81-HT-82) (A) **O 99**

Comparison of Profiles and Fluxes of Heat and Momentum Above and Below an Air-Water Interface (80-WA/HT-68) (A) **Ap 107**

Comparisons of Surface-Renewal Predictions with Field Data (80-WA/HT-67) (A) **My 85**

Computation of Radiation View Factors for Surfaces with Obstructed Views of Each Other (81-HT-57) (A) **O 98**

Correlation Between Results of Zone Method and Experiment in Radiative Heat Transfer (81-HT-71) (A) **O 98**

Corresponding States Correlation for the Spinodal and Homogeneous Nucleation Pressures (81-HT-19) (A) **O 94**

Critical Heat Flux in the Channels of a Closed-Loop Water-Cooled Turbine (81-HT-74) (A) **O 98**

De-Entrainment on Vertical Elements in Air Droplet Cross Flow (80-WA/HT-46) (A) **Ap 106**

Diagnostic Measurements of Fuel Spray Dispersion (80-WA/HT-35) (A) **Ap 105**

The Effect of Flow Maldistribution on the Thermal Response of Packed-Bed Converters and Thermal-Energy Storage Units (81-HT-59) (A) **O 98**

Effect of Pressure on Bubble Growth Within Liquid Droplets Heated to Their Limits of Superheat (81-HT-11) (A) **O 94**

The Effect of Solute Polarization on the Freezing and Thawing of Aqueous Solutions (80-WA/HT-21) (A) **Ap 104**

Effective Thermal Conductivity of Porous Solid-Gas Mixtures (80-WA/HT-63) (A) **My 84**

Effects of Pollutants and Urban Parameters on Atmospheric Temperature (80-WA/HT-4) (A) **Ap 103**

Effects of Wall Conduction on Heat Transfer for Turbulent Flow in a Circular Tube (81-HT-30) (A) **O 95**

Electrical Conductivity and Hall Parameter Measurements in Faraday MHD Generators (80-WA/HT-9) (A) **Ap 103**

Enhanced Heat Conduction in Phase-Change Thermal Energy Storage Devices (80-WA/HT-45) (A) **Ap 106**

An Equivalent Continuum Model for Fluid Flow, Heat and Mass Transport in Geologic Materials (81-HT-54) (A) **O 96**

Evaluation of Coefficients for the Weighted Sum of Gray Gases Model (81-HT-55) (A) **O 97**

Evaluation of a Helical Flow Recuperator (81-HT-25) (A) **O 95**

Experience with the Heating Plant Heat Recovery System at The University of New Mexico (80-WA/HT-16) (A) **Ap 104**

An Experiment and Model of a Fire Plume Rising from a Burning Heat Source of Finite Size (81-HT-5) (A) **S 89**

An Experimental and Analytical Investigation of Boiling Heat Transfer in Porous Bodies (81-HT-44) (A) **O 97**

Experimental Determination of Lower Plenum ECC Injection Effectiveness (80-WA/HT-60) (A) **My 84**

Experimental Free Convection from an Inclined Cylinder (80-WA/HT-29) (A) **Ap 105**

An Experimental Investigation of the Convective Heat Transfer Mechanisms within a Fur Layer (80-WA/HT-28) (A) **Ap 105**

An Experimental Investigation of Free Convection About a Heated Inclined Surface in a Porous Medium (81-HT-85) (A) **O 99**

An Experimental Investigation of Merging Buoyant Jets in a Crossflow (80-WA/HT-23) (A) **Ap 105**

An Experimental Study of a Closed Two-Phase Thermosyphon for Ice Production (81-HT-16) (A) **O 94**

An Experimental Study of Upper Hot Layer Stratification in Full-Scale Multiroom Fire Senarios (81-HT-9) (A) **S 89**

Finite Element Embedding with Optical Interference (81-HT-65) (A) **O 97**

Flow Through Axially Aligned Sequential Apertures of the Orifice and Borda Types (81-HT-79) (A) **O 99**

Forced Convective Post-CHF Heat Transfer and Quenching (80-WA/HT-69) (A) **My 85**

Forced Flow Cooling of a Volumetrically Heated Porous Layer (81-HT-46) (A) **O 97**

A Formulation for Radiative View Factors from Spheres to a Class of Axisymmetric Bodies (80-WA/HT-58) (A) **Ap 107**

Free and Forced Convective Effects on Air-Permeable Insulation Systems (81-HT-47) (A) **O 97**

Freezing Potential Studies in Wet Clay Systems (80-WA/HT-8) (A) **Ap 103**

Frost Formation on Vertical Cylinders in Free Convection (80-WA/HT-22) (A) **Ap 104**

Fuel for Future Transport Aircraft (81-HT-80) (A) **O 99**

On Heat Balance in Coal-Fired MHD Systems, Channel Heat Transfer and Electrode Temperature Distribution (80-WA/HT-11) (A) **Ap 103**

A Heat Exchanger Computational Procedure for Temperature-Dependent Fouling (81-HT-75) (A) **O 98**

Heat and Mass Transfer in a Fault-Controlled Geothermal Reservoir Charged at Constant Pressure (81-HT-52) (A) **O 97**

Heat and Mass Transfer from a Moist Porous Media of Large Particle Size (81-HT-53) (A) **O 97**

Heat Transfer Augmentation in Rod Bundles Near Grid Spacers (80-WA/HT-62) (A) **My 84**

Heat Transfer from a Buoyant Plume to an Unconfined Ceiling (81-HT-7) (A) **S 89**

Heat Transfer by Conduction and Radiation in One-Dimensional Planar Medium Using the Differential Approximation (81-HT-72) (A) **O 98**

Heat Transfer in Developing MHD Channel Flows in an Inclined Magnetic Field (80-WA/HT-12) (A) **Ap 104**

Heat Transfer of Fully Developed Flow in Curved Tubes (81-HT-39) (A) **O 96**

Heat Transfer and the Future of Solar Energy Utilization (80-WA/Sol-41) (A) **Ap 95**

Heat Transfer in a Periodic Boundary Layer Near an Axisymmetric Stagnation Point on a Circular Cylinder (81-GT-92) (A) **Je 112**

Heat Transfer and Reaction Rate in Steam Gasification of Coal (80-WA/HT-14) (A) **Ap 104**

High Effectiveness Recuperator for Waste Heat Recovery Applications (80-WA/HT-15) (A) **Ap 104**

Impact of a Global Warming on Biospheric Sources of Methane and its Climatic Consequences (80-WA/HT-2) (A) **Ap 103**

Industrial Waste Heat Recovery (80-WA/HT-17) (A) **Ap 104**

The Influence of a Laminar Boundary Layer and Laminar Injection on Film Cooling Performance (81-HT-38) (A) **O 96**

Influences of Thermal Properties on Distortion of High-Energy Laser Mirrors (81-HT-31) (A) **O 95**

An Integral Analysis for Incompressible Turbulent Thermal Boundary Layer Flow: Nonuniform Wall Heating (80-WA/HT-57) (A) **My 84**

An Integral Equation Approach to Radiative Heat Transfer Between Heat Conducting Solids of Arbitrary Shape (81-HT-73) (A) **O 98**

Laminar Wavy-Film Flow: Part I—Hydrodynamic Analysis (81-HT-13) (A) **O 94**; Part II—Condensation and Evaporation (81-HT-14) (A) **S 89**

Latent and Sensible Heat Transfer Rates in the Boiling of Binary Mixtures (81-HT-28) (A) **O 95**

A LH2 Engine Fuel System on Board—Cold GH2 Injection into Two-Stroke Engine with LH2-Pump (81-HT-81) (A) **O 99**

Liquid Hydrogen for Automotive Vehicles—Experimental Results (81-HT-83) (A) **O 99**

Low Reynolds Number Forced Convection Steam Cooling Heat Transfer in Rod Bundles (80-WA/HT-59) (A) **My 84**

A Mathematical Model of a Combustion Pot: Comparison of Theory and Experiment (80-WA/HT-32) (A) **Ap 105**

Measurement of the Enthalpy and Specific Heat of a Be_2C-Graphite-UC_2 Reactor Fuel Material to 1980 K (80-WA/HT-54) (A) **My 84**

Measurements of Effective Thermal Conductivity and Evaporative Heat Loss in Granular Porous Media (81-HT-58) (A) **O 98**

Measurements in a Pipe Flow Issuing Perpendicularly into a Cross Stream (80-WA/HT-24) (A) **Ap 104**

Mechanical, Thermal and Hydraulic Design of a Monometallic Water-Cooled Gas Turbine Nozzle (81-HT-77) (A) **O 99**

Mechanisms and Characteristics of Combustion of Water-in-Oil Emulsion Sprays (80-WA/HT-38) (A) **Ap 105**

Melting with a Heated Plate Under Contact Pressure-Variable Property Solution (80-WA/HT-7) (A) **Ap 103**

A Method for Determining Rewetting Velocity Under Generalized Boiling Conditions (80-WA/HT-40) (A) **Ap 106**

MHD Electrode Performance; Heat Transfer and Voltage Drop (80-WA/HT-10) (A) **Ap 104**

11.5 Micron Emission from Smoke Computed Using Finite Cloud Geometry (80-WA/HT-1) (A) **Ap 103**

Milwaukee Hosts Heat Transfer Conference, preview (NR) **Je 80**

Mixed Convection in Rectangular Channel Flow with Smooth Surfaces and One Heated Wall (81-HT-6) (A) **S 88**

Mixed Convection in a Wall Plume (81-HT-37) (A) **O 96**

A Mixed Gray-Gas Model to Calculate Water Vapor Standard Emissivities (81-HT-63) (A) **O 97**

Mixing and Gasification of Coal in an Entrained Flow Gasifier (80-WA/HT-30) (A) **Ap 105**

Moisture Transfer in Concrete Pavements (81-HT-32) (A) **O 96**

A Monte Carlo Procedure for Two-Dimensional Steady Conduction at Straight Convecting Boundaries (80-WA/HT-42) (A) **Ap 106**

Nonequilibrium Flashing Model for Rapid Pressure Transients (81-HT-35) (A) **O 95**

A Nonequilibrium Vapor Generation Model for Flashing Flows (81-HT-84) (A) **O 99**

Numerical Computation of Swirling Gas-Particle Flows: Application to Pulverized Coal Classifiers (80-WA/HT-31) (A) **Ap 105**

Numerical Prediction of Wall Temperatures for Near-Critical Para-Hydrogen in Turbulent Upflow Inside Vertical Tubes (80-WA/HT-52) (A) **Ap 106**

Numerical Simulation of Mesoscale Atmospheric Circulations Over Lake Michigan (80-WA/HT-65) (A) **My 85**

Numerical Study of Heat Transfer in Rectangular Air Enclosures of Aspect Ratio Less Than One (80-WA/HT-43) (A) **Ap 106**

A Numerical Study of Natural Convection in a Horizontal Porous Layer Subjected to an End-to-End Temperature Difference (80-WA/HT-39) (A) **Ap 106**

Numerical Study of Turbulent Droplet Flow Heat Transfer (80-WA/HT-48) (A) **Ap 106**

One-Dimensional Turbulent Flame Propagation in an Air-Fuel Droplet Mixture (80-WA/HT-37) (A) **Ap 105**

Optimal Design of Bayonet Tube Exchangers for Isothermal Shell-Side Conditions (81-HT-34) (A) **O 96**

Parametric Effects on Vapor Non-Equilibrium in Post-Dryout Heat Transfer (80-WA/HT-50) (A) **Ap 107**

Phase Change Around a Circular Cylinder (80-WA/HT-5) (A) **Ap 103**

The Prediction of the Flow and Heat Transfer in the Vicinity of a Jet in Crossflow (80-WA/HT-26) (A) **Ap 105**

Predictions of Drop Models for the Dispersed Flow Downstream of the Quench Front in Tube Reflood Experiments (80-WA/HT-47) (A) **Ap 106**

Predictions of Radiative Properties of Pulverized Coal and Fly-Ash Polydispersions (81-HT-24) (A) **O 94**

Pressure Drops and Heat Transfer in a Double Helix Heat Exchanger (80-WA/HT-38) (A) **Ap 106**

Radiation Configuration Factors Between Disks and a Class of Axisymmetric Bodies (81-HT-56) (A) **O 97**

Radiation Heat Transfer in an Irregular Enclosure with Axial Flow (81-HT-70) (A) **O 98**

Radiation and Smoke from the Gas Turbine Combustor Using Heavy Fuels (81-HT-21) (A) **O 94**

Radiative Heat Transfer in Fibrous Insulations—Part 1: Analytical Study (81-HT-42) (A) **O 96**; Part II: Experimental Study (81-HT-43) (A) **O 97**

Radiative Heat Transfer to High Pressure Steam (81-HT-69) (A) **O 98**

Radiative Heat Transfer in a Plane-Layer Mixture of Nongray Particulates and Molecular Gases (81-HT-60) (A) **O 98**

Release Rate Model for Developing Fires (81-HT-4) (A) **S 88**

Response of the Global Climate to Changes in Atmospheric Chemical Composition Due to Fossil Fuel Burning (80-WA/HT-3) (A) **Ap 103**

Results and Predictions of Scaled, Nuclear Large Break Loss-of-Coolant Experiments (80-WA/HT-49) (A) **Ap 106**

Scale Effects in the Dynamic Transfer Functions for Cavitating Inducers (80-WA/HT-51) (A) **Ap 107**

Scattering Band Absorption for a Planar Medium (81-HT-61) (A) **O 98**

Secondary Flow Structure in Combined Free and Forced Convection in a Horizontal Isothermal Tube (81-HT-36) (A) **O 96**

Shape Change of an Initially Vertical Wall Undergoing Condensation Driven Melting (81-HT-12) (A) **S 89**

A Simple Model of Seasonal Sea Ice Growth (80-WA/HT-20) (A) **Ap 104**

On the Simplifications of Mathematical Model for Nongrey Gas Radiation Heat Transfer (81-HT-64) (A) **O 97**

A Simplified Approach to the Evaluation of the Geometric-Mean Transmittance and Absorptance for Gas Enclosures (81-HT-62) (A) **O 99**

Sizing Values for Two-Phase and Subcooled Liquid Flows (80-WA/HT-64) (A) **My 85**

Small-Scale Observations of Wind Effects Penetration in the Open Sea (80-WA/HT-66) (A) **My 85**

Smoke Filling in an Enclosure (81-HT-8) (A) **S 89**

Some Fundamental Relationships for Tubular Heat Exchanger Thermal Performance (81-HT-33) (A) **O 95**

Soot Volume Fraction Profiles in a Free Combusting Boundary Layer (81-HT-1) (A) **S 88**

On the Spectral Emissivity of Pulverized Coal and Char (81-HT-23) (A) **O 94**

Steam Condensation on Various Gold Surfaces (81-HT-15) (A) **O 94**

Stored Energy of Gamma-Irradiated 97 Percent Pure Rocksalt (80-WA/HT-53) (A) **Ap 106**

A Study of Non-Darcy Natural Convection from a Vertical Heated Surface in a Saturated Porous Medium (81-HT-45) (A) **O 97**

Surface Tension Effects During Condensation on a Horizontal Tube (81-HT-26) (A) **O 95**

A Theoretical Study of Ignition in the Laminar Mixing Layer (81-HT-20) (A) **O 94**

Thermal and Flow Analysis of a Convection, Air-Cooled Ceramic Coated Porous Metal Concept for Turbine Vanes (81-HT-48) (A) **O 97**

Thermal-Hydraulic Differential Sensitivity Theory (80-WA/HT-56) (A) **My 84**

Thermal Performance Analysis of an MHD Simulation Test Facility (80-WA/HT-13) (A) **Ap 104**

Thermal Properties of Rock Salt and Quartz Monzonite to 573K and 50-MPa Confining Pressure (81-HT-51) (A) **O 95**

Thermal Radiation Properties of Pure H_2O Ice from 0.70 to 1.35 Micrometers (81-HT-67) (A) **O 99**

Thermal Radiation Properties of ThO_2 in Contact with Sodium and Steel (81-HT-66) (A) **O 98**

A Three-Dimensional Air-Vapor-Droplet Local Interaction Model for Spray Units (81-HT-18) (A) **O 94**

Transient Film Condensation on a Finite Horizontal Plate (81-HT-27) (A) **O 95**

Transient Laminar Mixed Convection from a Moving Vertical Plate (81-HT-40) (A) **O 96**

Transient Simultaneous Heat and Mass Transfer in Moist, Unsaturated Soils (81-HT-50) (A) **O 97**

Turbulent Boundary Layer Heat Transfer Experiments: A Separate Effects Study on a Convexly Curved Wall (81-HT-78) (A) **O 98**

A Unified Analysis of Concurrent Modes of Flame Spread (81-HT-10) (A) **O 94**

U-Tube PWR Steam Generator Heat Transfer During a Large Loss of Coolant Accident Transient (80-WA/HT-61) (A) **My 84**

Variable Elimination in the Home Fire Code (81-HT-3) (A) **S 88**

Heat Transfer Coefficients

Heat Transfer Coefficients for Staggered Arrays of Short Pin Fins (81-HT-75) (A) **Je 110**

Some Modifications to, and Operational Experiences with, the Two-Dimensional, Finite-Difference, Boundary-Layer Code, STAN5 (81-GT-89) (A) **Je 111**

Heat Transfer Fluid

Development of a Solar Thermal Central Heat Receiver Using Molten Salt (81-Sol-2) (A) **S 80**

Heat Transfer Measurements

Evaluation of a Method for Heat Transfer Measurements and Thermal Visualization Using a Composite of a Heater Element and Liquid Crystals (81-GT-93) (A) **Je 112**

Heat Transfer Rate

Short Duration Measurements of Heat Transfer Rate to a Gas Turbine Rotor Blade (81-GT-146) (A) **Jl 85**

Heated Plates

Melting with a Heated Plate Under Contact Pressure-Variable Property Solution (80-WA/HT-7) (A) **Ap 103**

Heated Streams

An Analytical Examination of the Behavior of Oil Sand Fragments in Heated Streams (80-WA/HT-33) (A) **Ap 105**

Heated Walls

Mixed Convection in Rectangular Channel Flow with Smooth Surfaces and One Heated Wall (81-HT-6) (A) **S 88**

Heaters

Design and Evaluation of a Computer Controlled Solar Collector Simulator (80-WA/Sol-6) (A) **Ap 92**

Heating

Solar Brayton Cycle for Heating and Cooling (80-WA/Sol-33) (A) **Ap 95**

Heating, Cooling Systems

The Parallel Heat Pump and Photovoltaic Heating and Cooling—Phase II (80-WA/Sol-40) (A) **Ap 95**

Heating Methods

Results of a Government and Industry Survey of the Heating Methods Used to Determine Missile Structural Temperatures (80-ENAs-26) (A) **Mr 112**

Heating Systems

Bond Graph Models for Simulating HVAC Systems (80-WA/Sol-16) (A) **Ap 93**

Sun Heats Italian Tannery (IF) **Ag 51**

Heavy Crudes

The Refinery of the Future (ES) **S 25**

Heavy-Duty Gas Turbines

Aerodynamic Design and Testing of an Improved First-Stage Compressor Rotor for a Heavy-Duty Gas Turbine (81-GT-135) (A) **Jl 85**

The Westinghouse 501D Combustion Turbine Engine (81-GT-32) (A) **Je 106**

Heavy-Duty Rotors

Experience with Large Heavy-Duty Gas Turbine Rotors (81-GT-181) (A) **Jl 88**

Heavy Fuel Oil

Refinery Processing Trends (IF) **Mr 77**

Heavy Fuels

Economics of Heavy Fuels in Gas Turbines and Combined Cycles (81-GT-45) (A) **Je 107**

Radiation and Smoke from the Gas Turbine Combustor Using Heavy Fuels (81-HT-21) (A) **O 94**

Heavy Hydrocarbons

Design of Turbo Machine Set for Fluid Catalytic Cracking Plant and its Shop-Testing Under Full-Load Conditions (81-GT-101) (A) **Je 112**

Heavy Oil

Operating on #6 Oil (ES) **N 71**

Heavy Train Service
Unit Train Coal Car Design Considerations (81-RT-3) (A) **Ag 77**
Hebrank, W. H. A Model for Drying on Adiabatic Saturation Lines (80-Tex-2) (A) **F 122**
Hecht, S. L. FETF Core Component Duct Lifetime: Criteria and Core Management Methods (81-PVP-23) (A) **Ag 80**
Hedden, O. F. Underused Educational Resource (C) **O 51**
Hadman, P. O. Mixing and Gasification of Coal in an Entrained Flow Gasifier (80-WA/HT-30) (A) **Ap 105**
Hedrick, J. K. Stability and Curving Mechanics of Rail Vehicles (80-WA/DSC-15) (A) **Mr 115**
Heer, E. Robots and Manipulators **N 42**
Heil, T. C. Boiler Heat Transfer Model for Operator Diagnostic Information (81-JPGC-Pwr-14) (A) **N 111**
Heinrich, S. R. Shuttle Orbiter Ammonia Boiler Subsystem (81-ENAs-44) (A) **O 101**
Heinsohn, R. J. Predicting Trajectories and Concentrations of Particles in a Grinding Booth (81-FE-23) (A) **S 82**
Helical Cutter
Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part 1: Plain Milling with a Single-Toothed Helical Cutter (80-WA/Prod-4) (A) **My 82**; Part 2: Plain Milling with a Multitoothed Helical Cutter (80-WA/Prod-5) (A) **My 82**
Helical Flow
Evaluation of a Helical Flow Recuperator (81-HT-25) (A) **O 95**
Helical Gears
The Kinematics of Crossed Helical Gears (80-DET-37) (A) **F 121**
Helical Rods
Axial Response of Oval Wire Ropes (80-WA/OCE-3) (A) **Ap 97**
Helical Springs
Computer-Aided Design of Helical Compression Springs: Statically Loaded Springs of Round Wire with Residual Stresses Induced by Presetting Operation (80-DET-59) (A) **Mr 107**
Helically Armored Cables
Torque and Stress Balanced Design of Helically Armored Cables (80-WA/OCE-1) (A) **Mr 118**
Helicopter Engines
Unbalance Response of a Two-Spool Gas Turbine Engine with Squeeze Film Bearings (81-GT-219) (A) **JI 90**
Helicopters
Model Analysis Using Helicopter Dynamic Test Data (81-DET-30) (A) **O 103**
A Versatile Microprocessor Controller for Low-Cost Helicopter Applications (81-GT-137) (A) **JI 85**
Helium
Airships Rise Again; Computers Throughout the Design Function (NR) **Je 74**
Hellstrom, G. Evaluation of a Helical Flow Recuperator (81-HT-25) (A) **O 95**
Helmholtz Equation
Evaluation of Eigenvalues in Regions of Complicated Boundary Shape in Problems Governed by Helmholtz Equation (81-DET-76) (A) **O 105**
Hemami, H. Modeling of Nonholonomic Dynamic Systems With Applications (81-APM-12) (A) **S 84**
Henderson, R. E. The Influence of Unsteady Rotor Response on a Distorted Flow Field (81-GT-185) (A) **JI 89**
Hendricks, R. C. Flow Through Axially Aligned Sequential Apertures of the Orifice and Borda Types (81-HT-79) (A) **O 99**
Hendrie, S. D. Analytical Predictions of Liquid and Air Photovoltaic/Thermal Flat-Plate Collector Performance (80-WA/Sol-3) (A) **Ap 92**
Hengel, M. F. Train Brake and Track Capacity Requirements for the 80s (81-RT-11) (A) **Ag 76**
Henriquez, E. J. Optimum Design and Creep Relaxation of Dissimilar-Material Multilayer Shrink Fitted Vessels (81-PVP-30) (A) **Ag 81**
Henry, J. F. Influence of Service Exposure on Base and Weld Metal of 1/2 Cr- 1/2 Mo- 1/4 V High-Pressure Steam Inlet Piping (81-PVP-24) (A) **Ag 80**
Henze, R. H. Enhanced Heat Conduction in Phase-Change Thermal Energy Storage Devices (80-WA/HT-45) (A) **Ap 106**
Heppner, D. B. Nitrogen Supply System Based on Hydrazine Dissociation (81-ENAs-27) (A) **O 101**
Hepworth, H. K. Rotor-Tip Leakage: Part 1—Basic Methodology (81-GT-71) (A) **Je 110**
Herbert, J. T. A High-Pressure Swivel for Natural Gas Service and Oscillating Motion in a Marine Environment (81-Pet-19) (A) **My 90**
Herrera, M. L. Analytical Evaluation of Residual Stresses in Piping Subjected to Induction Heating Stress Improvement Process and Application to Operating Plants (81-PVP-19) (A) **Ag 80**
Herring, J. R. Theoretical Investigation of the Decay of Scalar Variance Injected into Homogeneous Turbulence (81-FE-31) (A) **S 83**
Herringbone Gears
Investigation of the Failure of a Large Gearset (80-WA/DE-15) (A) **Ap 101**
Herrmann, G. Dynamic Response of a Rectangular Plate with Initial Imperfections Under Large In-Plane Forces (81-DET-80) (A) **D 90**; Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plane Strain, Numerical Results (80-WA/APM-3) (A) **Ja 99**; Nondestructive Evaluation of the J and M Integrals (81-APM-2) (A) **S 83**
Heshmat, H. Development of Foil Journal Bearings for High Load Capacity and High Speed Whirl Stability (81-Lub-36) (A) **D 98**
Hesketh, H. E. Characterization of Dust and Emissions from a Taconite Bulk Handling Facility (80-WA/APC-2) (A) **Ap 102**
Hess, C. Storm Over S-T View (C) **Ja 50**
Hess, C. W. Heat Exchanger Applications During TMI-2 Post-Accident Cooldown (81-JPGC-NE-9) (A) **N 110**
Heuristic Optimization Scheme
Principles of a Heuristic Optimization Technique as an Aid In Design—An Overview (80-DET-44) (A) **F 121**
Hibner, D. H. Optimum Friction Damping of a Flexible Rotor (81-GT-156) (A) **JI 86**
Hickox, C. E. A Numerical Study of Natural Convection in a Horizontal Porous Layer Subjected to an End-to-End Temperature Difference (80-WA/HT-39) (A) **Ap 106**
High Efficiency Gas Turbines
Design Analysis of High-Efficiency Low-Stress Ceramic Gas Turbines (81-GT-130) (A) **JI 84**
Mechanical Design of a High-Efficiency 7.5-MW (10,000-hp) Gas Turbine (81-GT-210) (A) **JI 90**
High Energy Laser Mirrors
Influences of Thermal Properties on Distortion of High-Energy Laser Mirrors (81-HT-31) (A) **O 95**
High-Gradient Magnetic Separation
Magnetic Separation (NB) **N 91**
High Inlet Temperatures
Ultra-Lean Combustion at High Inlet Temperatures (81-GT-44) (A) **Je 107**
High-Phase Order
Power Transmission Milestone (ES) **Mr 36**
High-Power Lasers
Multiclient Laser Program (EN) **N 95**
High Pressure Rheology
Some Observations in High Pressure Rheology of Lubricants (81-Lub-17) (A) **D 96**
High Pressure Steam
Radiative Heat Transfer to High Pressure Steam (81-HT-69) (A) **O 98**
High Pressure Turbine
Pulsation of High Pressure Turbine (80-JPGC/Pwr-14) (A) **F 117**
High-Pressure Vessels
Failure of a High-Pressure Vessel in Ammonia Service (81-PVP-8) (A) **Ag 79**
High Rotational Speed
A Development of the Fuel Atomizing Device Utilizing High Rotational Speed (81-GT-180) (A) **JI 88**
High Speed Cascades
The Present Role of High Speed Cascade Testing (81-GT-95) (A) **Je 111**
High-Speed Fans
Supersonic Stall Flutter of High-Speed Fans (81-GT-184) (A) **JI 89**
High-Speed Machinery
On the Dynamic Gear Tooth Loading as Affected by Bearing Clearances in High-Speed Machinery (81-DET-112) (A) **D 91**
Optimum Balancing of Combined Pitching and Yawing Moments in High-Speed Machinery (80-DET-7) (A) **Mr 106**
A Variational Formulation for the Finite Element Analysis of High-Speed Machinery (80-WA/DSC-38) (A) **Mr 117**
High Speed Mechanisms
On the Prediction of Journal-Bearing Separation in High Speed Mechanisms with Clearances (80-WA/DSC-36) (A) **Mr 117**
Stress Fluctuation on High Speed Mechanisms (80-DET-21) (A) **F 119**
High Speed Rocket Sleds
Dynamic Analysis of High Speed Rocket Sleds (81-DET-42) (A) **O 104**
High Speed Rotors
A System to Measure the Response of a High-Speed Rotor to a Sudden Imbalance (81-GT-117) (A) **Je 113**
High-Sulfur Coal
Blended Coal (ES) **Ja 21**
Indiana Tests a Scrubber (ES) **Ag 20**
Unique Power Plant (BTR) **Ja 60**
High Temperature Structure Design
A Study on Creep Behavior Evaluation for Welded Joint in High Temperature Structure Design (81-PVP-36) (A) **Ag 82**
High Temperature Technology
High Temperature Solar Thermal Technology (80-WA/Sol-20) (A) **Ap 94**
High Temperature Turbines
Test Verification of Water Cooled Gas Turbine Technology (81-GT-66) (A) **Je 109**
Hilbert, W. F. Environmental Control System Concept Study for a Navy V/STOL Aircraft (80-ENAs-47) (A) **Mr 114**
Hill, D. C. An Application of Mixture Theory to Particulate Sedimentation (80-WA/APM-1) (A) **Ja 99**
Hilt, M. B. Evaluation of Advanced Combustors for Dry NO_x Suppression with Nitrogen Bearing Fuels in Utility and Industrial Gas Turbines (81-GT-125) (A) **Je 113**
Hilton, S. O. Influence of Service Exposure on Base and Weld Metal of 1/2 Cr-1/2 Mo-1/4 V High-Pressure Steam Inlet Piping (81-PVP-24) (A) **Ag 80**
Hinds, J. A. Analysis of Heat and Mass Transfer Within a Sheet of Papermaking Fibers During Drying (81-HT-49) (A) **O 97**
Hinton, T. E. A Method for Evaluating the Relative Worth of Research and Development Tasks to Prioritize Them (80-WA/Mgt-4) (A) **Ja 103**
Hippensteele, S. A. Evaluation of a Method for Heat Transfer Measurements and Thermal Visualization Using a Composite of a Heater Element and Liquid Crystals (81-GT-93) (A) **Je 112**
Hiral, H. Stress Analysis of a Penny-Shaped Crack Located Between Two Spherical Cavities in an Infinite Solid (80-WA/APM-12) (A) **Ja 100**
Hirata, M. Studies of Full-Coverage Film Cooling Part 1: Cooling Effectiveness of Thermally Conductive Wall (81-GT-37) (A) **Je 107**; Part 2: Measurement of Local Heat Transfer Coefficient (81-GT-38) (A) **Je 108**
Hirose, S. The Basic Motion Regulation System for a Quadruped Walking Vehicle (80-DET-34) (A) **F 120**
Hirsch, Ch. Finite Element Methods for Transonic Blade-to-Blade Calculation in Turbomachines (81-GT-5) (A) **Je 104**
Hirschfeld, F. Engineer, Entrepreneur, Economist—All in One! **D 36**; Engineers' Salaries—An Update **Mr 40**; "Hands-On" Learning at Cal Poly **Ap 49**; Helping the Student Section Help Itself **Je 54**; Mirror Fusion—Another Path to Fusion Power **JI 24**; The Professor with the Innovative Touch **S 26**; Ralph E. Flanders—A Yankee Engineer-Politician **Mr 38**; Stephen P. Timoshenko—and the Birth of the Applied Mechanics Division **F 24**; William F. Durand—Dean of American Engineers **Ja 22**; The Year Ahead with President Gaither **JI 20**
Hirshburg, R. I. Laminar Wavy-Film Flow: Part I—Hydrodynamic Analysis (81-HT-13) (A) **O 94**; Part

II—Condensation and Evaporation (81-HT-14) (A) **S 89**

Hisakado, T. Lubrication Mechanism of Solid Lubricants in Oils (81-Lub-50) (A) **D 99**

Historic American Engineering Record
HAER's Landmark Contributions (C) **O 51**

Historical Analysis
Whither ASME? (STV) **O 83**

Historical Perspective
Centennial Issue: Kudos and Comments (C) **Ja 48**

History
History and Engineering (EN) **O 86**

Hitomi, K. Optimization Analysis of Automated Assembly Systems (80-WA/Prod-20) (A) **My 83**; Optimum Process Design for a Single-Stage Multifunctional Production System (80-WA/Prod-19) (A) **My 83**

Hixson, E. Analytical Modeling of Wave Interference Directional Microphones (80-WA/NC-6) (A) **F 124**

Hladun, A. R. The Performance of Portable Evacuation Compressors in Gas Transmission Service (81-GT-140) (A) **Jl 85**

Hobs
Grinding Wheel Profile for Hob Relief Grinding (81-DET-113) (A) **D 91**

Hoch, J. Two-Dimensional Turbulent Offset Jet-Boundary Interaction (80-WA/FE-12) (A) **My 85**

Hochreiter, L. E. Heat Transfer Augmentation in Rod Bundles Near Grid Spacers (80-WA/HT-62) (A) **My 84**; Low Reynolds Number Forced Convection Steam Cooling Heat Transfer in Rod Bundles (80-WA/HT-59) (A) **My 84**; U-Tube PWR Steam Generator Haat Transfer During a Large Loss of Coolant Accident Transient (80-WA/HT-61) (A) **My 84**

Hocking, G. An Equivalent Continuum Model for Fluid Flow, Heat and Mass Transport in Geologic Materials (81-HT-54) (A) **O 96**

Hodograph Transformation
The Effect of Gravity on Certain Curved Channel Potential Flows (81-FE-19) (A) **S 82**
The Study of Sluice Gate and Sharp-Crested Weir Through Hodograph Transformations (81-APM-23) (A) **S 85**

Hoffman, G. S. Scale Effects in the Dynamic Transfer Functions for Cavitating Inducers (80-WA/HT-51) (A) **Ap 107**

Hoffmann, J. A. Effects of Free-Stream Turbulence on Diffuser Performance (81-FE-4) (A) **Ag 83**

Hofman, G. L. Operational Safety and Reliability Research at EBR-II (81-JPGC-NE-11) (A) **N 110**

Hogan, J. S. Response of the Global Climate to Changes in Atmospheric Chemical Composition Due to Fossil Fuel Burning (80-WA/HT-3) (A) **Ap 103**

Hoisting Boats
Winch Design—Good or Bad (80-WA/DE-11) (A) **Ap 98**

Holbert, D. R. Technical Considerations in Drainhole Drilling (81-Pet-14) (A) **My 90**

Holden, P. C. The Westinghouse 501D Combustion Turbine Engine (81-GT-32) (A) **Je 106**

Holland, R. J. Sunflower Seed Hulls as Supplementary Fuel to Coal-Fired Power Plants (81-JPGC-Fu-10) (A) **D 94**

Hollworth, B. R. Arrays of Impinging Jets With Spent Fluid Removal Through Vent Holes on the Target Surface, Part 2: Local Heat Transfer (81-HT-76) (A) **O 99**

Holographic Interferometry
The Quantitative Analysis of Three-Dimensional Displacement Fields by Single Laser Hologram (81-GT-215) (A) **Jl 91**

Holography
The Promise in Acoustical Holography (BTR) **O 60**
Recording Fluid Currents by Holography (BTR) **Ja 53**

Holography Interference
Determination of Vibration Amplitudes and Stresses Using the Holography Interference Techniques and Finite Element Method (81-DET-132) (A) **N 108**

Holosyen, S. Circular Saw Vibration Control by Induction of Thermal Membrane Stresses (80-WA/Prod-8) (A) **My 82**

Holt, C. E. Coal-Fired Heaters for CCGT Cogeneration Service (81-GT-212) (A) **Jl 90**

Holt Tractor
Britain Claims its Share of Landmark (C) **S 48**
Remembering the Holt Tractor (C) **Ag 43**

Home Energy Audits
Energy Auditors Certification Program (NB) **Ag 63**

Home Fire Code
Variable Elimination in the Home Fire Code (81-HT-3) (A) **S 88**

Homogeneous Nucleation
Corresponding States Correlation for the Spinodal and Homogeneous Nucleation Pressures (81-HT-19) (A) **O 94**

Homogeneous Turbulence
Theoretical Investigation of the Decay of Scalar Variance Injected into Homogeneous Turbulence (81-FE-31) (A) **S 83**

Homopolar Generator
Analysis of Defective Hydrostatic Radial Bearings for 5-MJ Homopolar Generator (80-WA/DE-14) (A) **Ap 101**

Honea, F. I. The Potential for Use of Peat Blends with Coal for Electric Power Generation (81-JPGC-Fu-2) (A) **D 93**; The Use of Additives to Reduce Ash Fouling Problems in Lignite-Fired Boilers (80-JPGC/Fu-3) (A) **Ja 99**

Hopkins, D. C. Forced Ventilation Envelope House: Computer Simulations (80-WA/Sol-5) (A) **Ap 92**; Solar Brayton Cycle for Heating and Cooling (80-WA/Sol-33) (A) **Ap 95**

Hopkins, T. Speed Control for Universal Motors (81-DE-1) (A) **Ag 77**

Hoppmann, W. H., II No Substitute for Knowledge (C) **D 56**

Horak, D. Stability and Curving Mechanics of Rail Vehicles (80-WA/DSC-15) (A) **Mr 115**

Horgan, J. J. The Partial Coal Gasification Combined Cycle Power Plant (81-JPGC-GT-2) (A) **D 95**

Hori, A. Outline of Plan for Advanced Research Gas Turbine (81-GT-28) (A) **Je 107**

Horizontal Duct
Theoretical Prediction of Onset of Horizontal Slug Flow (80-WA/FE-6) (A) **My 85**

Horizontal Isothermal Tube
Secondary Flow Structure in Combined Free and Forced Convection in a Horizontal Isothermal Tube (81-HT-36) (A) **O 96**

Horizontal Plates
Transient Film Condensation on a Finite Horizontal Plate (81-HT-27) (A) **O 95**

Horizontal Porous Layer
A Numerical Study of Natural Convection in a Horizontal Porous Layer Subjected to an End-to-End Temperature Difference (80-WA/HT-39) (A) **Ap 106**

Horizontal Surfaces
Comparison of Several Models for Long-Term Monthly Average Daily Insolation and Horizontal Surfaces and the Estimation of Horizontal Surface Insolation for 16 U.S. Locations (80-WA/Sol-28) (A) **Ap 94**

Horizontal Tubes
Surface Tension Effects During Condensation on a Horizontal Tube (81-HT-26) (A) **O 95**

Horn, O. E. Optimization Design Considerations for Cogeneration Plants (80-JPGC-GT-7) (A) **D 95**; Optimization of Gas Turbine Cycles with Variable Number of Combustion, Compressor, and Inter-Cooler Stages (80-JPGC-GT-6) (A) **D 95**

Horner, M. W. Test Verification of Water Cooled Gas Turbine Technology (81-GT-66) (A) **Je 109**

Horowitz, R. An Adaptive Control Scheme for Mechanical Manipulators—Compensation of Nonlinearity and Decoupling Control (80-WA/DSC-6) (A) **Mr 114**

Horseshoes
Aluminum a 'Shoe-In' at Racetrack (BTR) **My 48**

Horton, T. E. The Inertial Pressure Concept (81-Pet-28) (A) **My 91**

Hoshizaki, T. Generic Waste Management Requirements for a Controlled Ecological Life Support System (81-ENAs-23) (A) **O 100**

Hospital Energy Management
Symposium on Hospital Energy Management, preview (NR) **Mr 79**

Hosne, A. J. Kineto-Elastodynamic Analysis of Mechanisms by Finite Element Formulations (80-DET-103) (A) **Mr 110**

Hot Air Collectors
Solar Energy Crop Dryers (IF) **S 59**

Hot Corrosion
Deposition—Hot Corrosion in Gas Turbine Engines (81-GT-153) (A) **Jl 86**
Gas Turbine Performance Deterioration and Water Wash Frequency (81-JPGC-GT-10) (A) **D 95**

Hot Dry Rock
Hot Dry Rock Geothermal (ES) **D 25**

Hot Formers
Hot Forming Technological Advances (BTR) **Jl 55**

Hot Gas Cleanup
Hot Gas Cleanup Program for Pressurized Fluidized Bed Combustor Combined Cycle Power Generation (81-JPGC-GT-5) (A) **D 95**

Hot Spot Detection
Hot Spot Detection in Generators with Optical Fibers (81-JPGC-Pwr-18) (A) **N 112**

Hot Water Diving Suits
Assessment of Thermal Protection Afforded by Hot Water Diving Suits (80-WA/OCE-4) (A) **Mr 117**

Hot Water Systems
Economic Analysis and Optimization of Solar Residential Space Heating (80-WA/Sol-11) (A) **Ap 93**

Houston Plan
Saving Energy via the "Houston Plan" (NB) **F 65**

Houtman, J. L. Flow Model Test for the Investigation of Feedwater Line Cracking for PWR Steam Generators (81-PVP-4) (A) **Ag 79**

Howard, G. S. The Westinghouse 501D Combustion Turbine Engine (81-GT-32) (A) **Je 106**

Howard, J. H. G. Flow Prediction in Rotating Ducts Using Coriolis-Modified Turbulence Models (80-WA/FE-1) (A) **My 85**

Howard, R. C. U-Tube PWR Steam Generator Heat Transfer During a Large Loss of Coolant Accident Transient (80-WA/HT-61) (A) **My 84**

Hows, B. M. Comparison of Profiles and Fluxes of Heat and Momentum Above and Below an Air-Water Interface (80-WA/HT-68) (A) **Ap 107**

Howell, H. R. Space Radiator Trade Studies for the 25-kW Power System (80-ENAs-27) (A) **Mr 112**

Howell, J. R. Analysis and Design of Hybrid Double-Absorption Cooling Systems for Low Grade Thermal Energy Applications (80-WA/HT-44) (A) **Ap 106**; Heat Transfer by Conduction and Radiation in One-Dimensional Planar Medium Using the Differential Approximation (81-HT-72) (A) **O 98**

Howell, R. C. Gentle Handling Methods for Fragile Particulate Bulk (80-WA/MH-1) (A) **Ap 96**

Hozl, R. A. Advanced Coating for Gas Turbine Materials (81-GT-85) (A) **Je 111**

Hsia, E. S. Sensitivity of Turbine Blade Temperatures to Tolerances of Design Variables (81-GT-90) (A) **Je 111**

Hsia, L. M. On the Principle of Transference in Three-Dimensional Kinematics (80-DET-88) (A) **Mr 109**; Stress Fluctuation on High Speed Mechanisms (80-DET-21) (A) **F 119**

Hsia, Y-T. An Experimental Investigation of Molecular Rarefaction Effects in Gas Lubricated Bearings at Ultra-Low Clearances (81-Lub-44) (A) **D 99**

Hsieh, B. J. On The Uniqueness and Stability of Endrochronic Theory (80-WA/APM-24) (A) **Ja 101**

Hsu, C. S. On the Inverse of a Special Class of Bilinear Systems (80-WA/DSC-13) (A) **Mr 115**; A Theory of Cell-To-Cell Mapping Dynamical Systems (80-WA/APM-26) (A) **Ja 101**; An Unravelling Algorithm for Global Analysis of Dynamical Systems: An Application of Cell-to-Cell Mappings (80-WA/APM-27) (A) **Ja 101**

Hu, M. H. Flow Model Test for the Investigation of Feedwater Line Cracking for PWR Steam Generators (81-PVP-4) (A) **Ag 79**

Hu-Chih Chao, C. A Method of Selecting Grid Size to Account for Hertz Deformation in Finite Element Analysis of Spur Gears (81-DET-116) (A) **N 107**

Huang, C. L. D. Moisture Transfer in Concrete Pavements (81-HT-32) (A) **O 96**

Hub-Tip Ratio
Effect of Blade Stagger Angle on Performance of a Transonic Compressor with Low Hub-Tip Ratio (81-GT-177) (A) **Jl 88**

Hubbell, J. E. Measure for Measure (C) **F 48**

Huber, D. A. Gasification of Coal for Cooperative Industrial Use (81-IPC-Fu-1) (A) **D 101**

Hudale, R. Pressure Vessels: An Integrated Approach to Design, Analysis, and Manufacturing (81-DET-119) (A) **N 107**

Hudson, S. L. Feasibility Study for the Use of Geothermal Energy at a Leggs' Hosiery Plant in New Mexico (81-Pet-6) (A) **My 89**

Huenefeld, J. C. A Study of Non-Darcy Natural Convection from a Vertical Heated Surface in a Saturated Porous Medium (81-HT-45) (A) **O 97**

Huey, C. O., Jr. The Cam-Link Mechanism: A General Overview and Specific Application to Rigid Body Motion (80-DET-15) (A) **F 119**

Hughes, N. R. Qualification of Induction Heating Stress Improvement for Mitigation of Stress Corrosion Cracking (81-PVP-13) (A) **Ag 79**

Hughes, T. J. R. Finite-Element Solution of Elastic-Plastic Boundary—Value Problems (81-APM-17) (A) **S 84**

Hulbert, G. Comparison of LMFBR Piping Response Obtained Using Response Spectra and Time History Methods (81-PVP-28) (A) **Ag 80**

Hull Shapes
Performance Evaluation of Buoy Shapes for Deep Ocean Systems (80-WA/OCE-12) (A) **Ap 97**

Human Error
Eliminating Human Error (ES) **N 71**

Human Factors Engineering
Anti-Exposure Suits in the VP Community (80-ENAs-43) (A) **Mr 113**

Human Nature
Nuclear Power: The Human Element (C) **Ap 56**

Human-Powered Flight
Gossamer Odyssey: The Triumph of Human-Powered Flight (CB) **Ag 84**

Human Qualities
The Human Side of Engineering (C) **D 56**

Human Resources
Human Resources in Japanese Industrial Development (CB) **My 93**
Working With People: Human Resource Management in Action (CB) **Ap 108**

Human Values
Technology, Environment, and Human Values (CB) **Jl 92**

Humphrey, J. A. C. Enhanced Heat Conduction in Phase-Change Thermal Energy Storage Devices (80-WA/HT-45) (A) **Ap 106**; Visualization of the Flow Structure at the Free Interface of Two Counter-Flowing Streams (80-WA/FE-11) (A) **My 88**

Humphries, E. Design Concepts and Equipment Selection Processes for Northern Compressor Stations (81-GT-131) (A) **Jl 84**

Hunt, D. H. A Classification of Coupler-Line Envelopes From Hinged Four-Bar Linkages (80-DET-42) (A) **F 121**

Hunt, K. H. Equations for Four-Bar Line-Envelopes (80-DET-40) (A) **F 121**

Hunt, L. New Complex-Number Form of the Cubic of Stationary Curvature in a Computer-Oriented Treatment of Planar Path-Curvature Theory for Higher-Pair Rolling Contact (80-DET-90) (A) **Mr 109**; New Complex-Number Forms of the Euler-Savary Equation in a Computer-Oriented Treatment of Planar Path-Curvature Theory of Higher-Pair Rolling Contact (80-DET-89) (A) **Mr 109**

Hunter, S. C. Formation of So_3 in Gas Turbines (81-GT-42) (A) **Je 106**

Hurn, E. J. Primary Loop Heat Exchanger for HTGR Plant Residual Heat Removal and Auxiliary Cooling System (81-JPGC-NE-10) (A) **N 110**

Hurst, B. E. Exxon Thermal $DeNO_x$ Process for Utility Boiler Applications (81-JPGC-Fu-9) (A) **D 94**

Hurwitz, M. J. Interim Report on Water Induction Detection Studies (81-JPGC-Pwr-27) (A) **N 113**

Huseyin, K. On the Stability of Equilibrium Paths Associated With Autonomous Systems (81-APM-9) (A) **S 84**

Hussain, M. A. Residual Stress Redistribution Caused by Notches and Cracks in a Partially Autofrettaged Tube (81-PVP-6) (A) **Ag 79**

Hussain, N. A. Analysis of Laminar Forced Convection Heat Transfer in the Entrance Region of a Flat Duct with Uniform Wall Temperature (81-HT-29) (A) **O 95**

Huston, L. Complex Number Synthesis of Four-Bar Path Generating Mechanisms Adjustable for Multiple Tangential Circular Arcs (80-DET-77) (A) **Mr 108**

Huston, R. L. Surface Geometry of Circular Cut Spiral Bevel Gears (81-DET-114) (A) **D 92**

Hutchins, W. H. High Effectiveness Recuperator for Waste Heat Recovery Applications (80-WA/HT-15) (A) **Ap 104**

Hutchinson, J. R. Vibrations of Solid Cylinders (80-WA/APM-20) (A) **Ja 101**

Huttelmaier, H. P. Analysis of Plate Vibrations Using Superelements (81-DET-65) (A) **N 106**

Hwang, J. Y. Data Analysis and Analytical Predictions of a Steam Generator Tube Bundle Flow Field for Verification of 2-D T/H Computer Code (81-JPGC-NE-1) (A) **N 109**

Hybrid Computing Technique
Hybrid Computer-Aided Design of a Hydrostatic Vehicle Drive with Energy Accumulator (80-DET-49) (A) **F 121**

Hybrid System
Approve Space-Age Sewage Treatment System (BTR) **O 55**

Hybrid Technique
Hybrid Position/Force Control of Manipulators (80-WA/DSC-23) (A) **Mr 115**

Hydraulic Actuators
Lock for Hydraulic Actuators (BTR) **Jl 49**

Hydraulic Design
Mechanical, Thermal and Hydraulic Design of a Monometallic Water-Cooled Gas Turbine Nozzle (81-HT-77) (A) **O 99**

Hydraulic Elevator
Hydraulic Resistance Effects on Hydraulic Elevator (80-DET-112) (A) **Mr 110**

Hydraulic Excitation Force
Experimental Research on the Hydraulic Excitation Force on the Pump Shaft (81-DET-71) (A) **O 104**

Hydraulic Expansion
Hydraulically Expanded Tube to Tubesheet Joints (81-PVP-35) (A) **Ag 82**

Hydraulic Fluids
Evaluation of Sealing Systems for Nonflammable Aircraft Hydraulic Fluids (81-Lub-51) (A) **D 99**

Hydraulic Instabilities
Hydraulic and Dynamic Instabilities in Feed Pumps in Large Fossil and Nuclear Applications in the U.S.A. (80-JPGC/Pwr-21) (A) **F 118**

Hydraulic Motors
The Block-Lift in Axial Piston Hydraulic Motors (81-FE-25) (A) **S 82**

Hydraulic Performance
A PWR Secondary System Behavior for Postulated Pipe Rupture (80-WA/NE-1) (A) **Ja 96**

Hydraulic Pumps
The Pivoted, Spherical Cap Slider Bearing (81-Lub-4) (A) **D 95**

Hydraulic Structures
The Design and Operation of Physical-Thermal Models (81-FE-16) (A) **S 82**

Hydraulics
Hydraulic Borehole Mining (81-Pet-6) (A) **My 89**
Spurious Opening of Hydraulic-Assisted, Pilot-Operated Valves—An Investigation of the Phenomenon (81-PVP-39) (A) **Ag 82**

Hydrazine Dissociation
Nitrogen Supply System Based on Hydrazine Dissociation (81-ENAs-27) (A) **O 101**

Hydrides
Exhaust-Heat Air Conditioning (IF) **Mr 78**

Hydrocarbon Combustion
Effect of Fuel Nitrogen and Hydrogen Content on Emissions in Hydrocarbon Combustion (81-GT-63) (A) **Je 109**

Hydrocarbon Condensate
Contamination of Centrifugal Process Gas Compressor Lube Oil and Seal Oil Systems by Hydrocarbon Condensate (81-GT-182) (A) **Jl 89**

Hydrodynamic Features
Laminar Wavy-Film Flow: Part 1—Hydrodynamic Analysis (81-HT-13) (A) **O 94**

Hydrodynamic Lubrication
Analysis of Starvation Effects on Hydrodynamic Lubrication in Nonconforming Contacts (81-Lub-52) (A) **D 100**
Hydrodynamic Lubrication of Finite Slider Bearings: Effect of Film Shape, and Their Computer Aided Optimum Designs (81-Lub-40) (A) **L 99**

Hydrodynamic Mass
Experimental Studies of Damping and Hydrodynamic Mass of a Cylinder in Confined Two-Phase Flow (81-DET-27) (A) **D 89**

Hydrodynamic Pressure Excitation
Fluid-Resonator Response to Hydrodynamic Pressure Oscillations (80-WA/NC-7) (A) **F 124**

Hydrodynamics
The Development of a Substitute Bird Model (81-GT-23) (A) **Je 106**

Hydroelectric Development
A New Era of Hydroelectric Development (STV) **D 85**

Hydroelectric Generating Units
Packaged Small Hydropower (ES) **Ag 21**

Hydroelectric Power
Small and Micro Hydroelectric Power Plants: Technology and Feasibility (Energy Technology Review No. 60) (CB) **Ap 109**

Hydroelectric Station
Old Hydro-New Life (ES) **F 22**

Hydrogen
Can Magnetic Refrigerators Liquefy Hydrogen at High Efficiency? (81-HT-82) (A) **O 99**
Getting the Most Out of Biomass (ES) **N 71**
Hydrogen from Methanol Fuels Chevy (BTR) **O 56**
Hydrogen from Sunlight (ES) **My 19**
The Methanol Car (ES) **N 71**

Hydrogen Isotopes
Elmo Bumpy Torus (ES) **S 25**

Hydrogen Plasma
The OHTE Concept (ES) **N 71**

Hydrogen Sulfide
Unique Power Plant (BTR) **Ja 60**

Hydromechanical Fuel Control
Digital Control Makes a Commercial Debut on the JT9D Engine (81-GT-199) (A) **Jl 89**

Hydronic Space Heating
Dynamic Modeling and Experimental Simulation of Active Solar Energy Systems for the Evaluation of Control Strategies (80-WA/Sol-14) (A) **Ap 93**

Hydroponics
Plants Flourish in Controlled Environment (BTR) **Ag 44**

Hydropower
China Looks to Hydro Power (ES) **My 19**
Packaged Small Hydropower (ES) **Ag 21**
Revitalizing Hydropower (ES) **Je 24**

Hydro-Power Plants
Hydro-Power Plant and Shot Tower Named Landmarks (NB) **Ag 64**

Hydropower Stations
Inflation-Free Energy (BTR) **O 61**

Hydrostatic Bearings
Analysis of Defective Hydrostatic Radial Bearings for 5-MJ Homopolar Generator (80-WA/DE-14) (A) **Ap 101**

Hydrostatic Vehicle Drive
Hybrid Computer-Aided Design of a Hydrostatic Vehicle Drive with Energy Accumulator (80-DET-49) (A) **F 121**

Hydrotreating
Commercializing Shale Oil (ES) **Jl 18**
Refinery Processing Trends (IF) **Mr 77**

Hyperstability
Application of Adaptive Control to a Computer Controlled Process (80-WA/DSC-40) (A) **Mr 117**

Hypocrisy
Keeping America Free (C) **S 49**

Hypogravity
Experiment Operations in Spacelab (80-ENAs-40) (A) **Mr 113**

Hypoid Gears
Making Large Spiral Bevel and Hypoid Gears **Ag 34**

Hypotrochoid Path
Analysis of a Classical Straight Line Mechanism Using Interactive Graphics (81-DET-105) (A) **N 107**

I

Ibrahim, Z. N. Evaluation of Dynamic Load Combination Fatigue Damage (81-PVP-20) (A) **Ag 80**

Ice
The Adhesion of Ice to Low Energy Solids (80-WA/HT-19) (A) **Ap 104**

Ice Production
An Experimental Study of a Closed Two-Phase Thermosyphon for Ice Production (81-HT-16) (A) **O 94**
Ice Protection
Ice Protection of Engine Air Inlet for Cruise Missile Application (80-ENAs-2) (A) **Mr 111**
Idler Loops
Complete Shaking Force and Shaking Moment Balancing of Link Mechanisms Using Balancing Idler Loops (80-DET-100) (A) **Mr 109**
Ignition
A Theoretical Study of Ignition in the Laminar Mixing Layer (81-HT-20) (A) **O 94**
Ignition Performance
Some Factors Affecting Altitude Relighting Performance of Turbojet Engine Combustor (81-GT-49) (A) **Je 108**
Iida, M. A LH2 Engine Fuel System on Board—Cold GH2 Injection into Two-Stroke Engine with LH2 Pump (81-HT-81) (A) **O 99**
Ikohagi, T. Supercavitating Cavity Observations by Means of Laser Velocimeter (80-WA/FE-5) (A) **My 85**
Ikoku, C. U. Pressure Behavior During Polymer Flow in Petroleum Reservoirs (81-Pet-32) (A) **My 91; Well Test Analysis for Enhanced Oil Recovery Projects (81-Pet-31) (A) My 90**
Illumination
Awards Program Recognizes Novel Lighting Systems (NR) **Ap 77**
Realistic Lighting Levels (BTR) **S 53**
Image Understanding
Seeing Machines: Current Industrial Applications **N 52**
Imaichi, K. A Vibration Source in Refrigerant Compressors (81-DET-72) (A) **O 104**
Imam, I. A New Solution to Coulomb Friction in Mechanism Bearings: Theory and Application (80-DET-52) (A) **Mr 106**
Imasu, K. A Vibration Source in Refrigerant Compressors (81-DET-72) (A) **O 104**
Impact
An Analysis of, and Some Observations on, Dynamic Fracture in an Impact Test Specimen (81-PVP-18) (A) **Ag 80**
Impact Loads
An Investigation of Impact Loads Due to Wheel Flats and Rail Joints (80-WA/RT-1) (A) **F 125**
Impact Studies
Superhybrid Composite Blade Impact Studies (81-GT-24) (A) **Je 106**
Impellers
A Blockage Model for Centrifugal Compressor Impellers (81-GT-11) (A) **Je 105**
The Effect of Impeller Tip Design on the Performance of a Mixed Flow Turbocharger Compressor (81-GT-7) (A) **Je 104**
A Study on Centrifugal Impeller and Diffuser Flow (81-GT-9) (A) **Je 104**
A Theoretical Study on Air Bubble Motion in a Centrifugal Pump Impeller (80-WA/FE-3) (A) **My 85**
Imperfection Sensitivity
On the Buckling Design of Spherical Shells (81-PVP-32) (A) **Ag 81**
Imperial System
Metric Pandora's Box? (C) **F 46**
More Metric Musings (C) **D 57**
Impinging Jets
Arrays of Impinging Jets With Spent Fluid Removal Through Vent Holes on the Target Surface, Part 2: Local Heat Transfer (81-HT-76) (A) **O 99**
Imported Equipment
Surge in Machine Tool Imports (BTR) **F 56**
Imports
Detroit Expected to Gain Ground Against Imports (BTR) **My 47**
In-Plane Forces
Dynamic Response of a Rectangular Plate with Initial Imperfections Under Large In-Plane Forces (81-DET-80) (A) **D 90**
In-Plane Loading
Fracture Criteria of Fibrous Laminated Composites Under In-Plane Multidirectional Loading (80-WA/APM-9) (A) **Je 100**
Quasi-Square Hole with Optimum Shape to an Infinite Plate Subjected to In-Plane Loading (80-WA/DE-3) (A) **Ap 98**
Inadequate Engineering
Death, Injury and Destruction of Property by Design (80-WA/DE-13) (A) **Ap 101**
Inagaki, T. Transverse Vibrations of a General Cracked-Rotor Bearing System (81-DET-45) (A) **D 89**
Incentives Program
Car of the Future: 100 mpg (BTR) **S 50**
Incineration
At the JPGC: Environmentally Safe Energy Production (NR) **D 68**
Incineration Methods
Deisgn of Sewage Sludge Incineration Systems (Pollution Technology Review No. 71) (CB) **Ap 109**
Incinerators
New Way to Treat Nuclear and Carcinogenic Waste (BTR) **O 58**
Inclined Cylinders
Experimental Free Convection from an Inclined Cylinder (80-WA/HT-29) (A) **Ap 105**
Inclined Surfaces
An Experimental Investigation of Free Convection About a Heated Inclined Surface in a Porous Medium (81-HT-85) (A) **O 99**
INCOCLAD Tubing
Evaluation of INCOCLAD 671/800 H Tubing After Nine Years of Reheater Service in a Coal-Fired Utility Boiler (80-WA/Fu-6) (A) **F 127**
Income
Engineers' Salaries (C) **My 43**
Job Changing and Income (EN) **Ap 82**
You've Come Long Way Baby . . . (NB) **Ji 80**
Incompressibility
Finite-Element Solution of Elastic-Plastic Boundary-Value Problems (81-APM-17) (A) **S 84**
Incompressible Fluids
Analysis of Face Seals with Shrouded Pockets (81-Lub-49) (A) **D 99**
A Prediction Method for Planar Diffuser Flows (81-FE-5) (A) **Ag 83**
Vibrations of an Elastically Mounted Spinning Rotor Partially Filled with Liquid (81-DET-54) (A) **D 89**
Independent Engineering Profession
Zwiep Lauded (C) **F 47**
Indexing Mechanism
Self-Conjugate Cam Design for a High-Speed Low-Cost Indexing Mechanism (80-DET-14) (A) **F 119**
Indoor Air
Indoor Pollutants (BTR) **D 62**
Pollution-Measuring Devices to Assess Indoor Air (NR) **Je 81**
Indoor Air Quality
Legionnaires' Disease: Air-Conditioning Systems But One Source of Infection (BTR) **Je 69**
Induction Driving Motor
Role of Induction Driving Motor in Transmission Dynamics (80-DET-96) (A) **Mr 110**
Induction Heating
Analytical Evaluation of Residual Stresses in Piping Subjected to Induction Heating Stress Improvement Process and Application to Operating Plants (81-PVP-19) (A) **Ag 80**
The Effects of Induction Heating Parameters on Controlling Residual Stress in Intermediate Size Pipes (81-PVP-31) (A) **Ag 81**
Plastic Welder (BTR) **Ja 55**
Induction Heating Stress
Qualification of Induction Heating Stress Improvement for Mitigation of Stress Corrosion Cracking (81-PVP-13) (A) **Ag 79**
Induction Loop Systems
International Hearing Aid Agreement (BTR) **S 54**
Industrial Applications
Development of Multi-Bar Weft-Insert Warp Knit Glass Fabrics for Industrial Applications (80-Tex-7) (A) **F 123**
Fuel Gas From Coal—Industrial Applications (81-IPC-Fu-3) (A) **D 101**
Industrial Fluidized Bed Steam Generation (81-IPC-Fu-2) (A) **D 101**
Industrial Archaeology
The Batsford Guide to the Industrial Archaeology of East Anglia: Cambridgeshire, Essex, Norfolk, Suffolk (CB) **Mr 119**
Industrial Combustion Chambers
The Design and Performance of a Sturdy Industrial Combustion Chamber for a 14-MW Gas Turbine (81-GT-48) (A) **Je 108**
Industrial Development
Human Resources in Japanese Industrial Development (CB) **My 93**
Technical Aid for Third World (IF) **N 82**
Industrial Engineers
CAD/CAM Center at University of Detroit (EN) **My 71**
Industrial Engineering Pay Survey (NB) **Ji 80**
Robot Applications—The Engineer's Role? (NB) **S 70**
Industrial Equipment
Automation Seen as Key Piece in Productivity Puzzle at Material Handling Show (NR) **Je 85**
Industrial Exhibit
Hanover Fair: A New Concept (IF) **Ja 66**
Industrial Fans
A Comparison of Two Alternative Methods for Defining Fan Performance (80-WA/PTC-1) (A) **Ap 101**
Industrial Flow Measuring
Praise for Perspective (C) **O 50**
Industrial Gas Turbines
Application of Airblast Atomizing Fuel Nozzles to Two Prototype Industrial Gas Turbines (81-GT-82) (A) **Je 110**
Design and Preliminary Results of a Fuel Flexible Industrial Gas Turbine Combustor (81-GT-108) (A) **Je 113**
Maintenance of Aero-Derived Industrial Gas Turbines (81-GT-192) (A) **Ji 80**
The Ruston Tornado—A 6-MW Gas Turbine for Industrial Application (81-GT-171) (A) **Ji 87**
Industrial Heat Exchangers
Flow-Induced Tube Vibration Tests of Typical Industrial Heat Exchanger Configurations (81-DET-37) (A) **O 104**
Industrial Heating
Solar Process Heat for Industry (IF) **Ji 60**
Industrial Lighting
Awards Program Recognizes Novel Lighting Systems (NR) **Ap 77**
Industrial Noise
Industrial Noise Pollution—Part 1: The Nature and Extent of the Problem **Ji 34**; Part 2: Identifying and Controlling Industrial Noise Sources **Ag 24**; Part 3: The Practical Function of Acoustical Engineering **S 42**; Part 4: An Effective Hearing Conservation Program **O 31**
Industrial Plants
Energy Conservation in Buildings and Industrial Plants (CB) **Mr 119**
Observations from Ten Years of Industrial Plant Energy Surveys (81-PID-4) (A) **My 86**
Industrial Power
ASME Industrial Power Conference, preview (NR) **Ji 57**
Industrial Protection
Doomsday + 1 (BTR) **Mr 66**
Industrial Revolution
The Engineer's Conscience (CB) **N 116**
Industrial Robots
ASME Student Section News **Ap 84**
Dynamic Continuous Path Synthesis of Industrial Robots Using ADAMS Computer Program (80-DET-41) (A) **F 121**
Robot Applications—The Engineer's Role? (NB) **S 70**
Robotic Systems Course Draws Big Response (EN) **Je 91**
Robotics in Practice: Management and Applications of Industrial Robots (CB) **D 102**
Steel-Collar Worker (NB) **My 86**
Industrial Salaries
ASEE Working to Solve Critical Faculty Shortage (EN) **Ag 66**
Engineering Education—A Model for Public Discussion (WW) **N 96**
Industrial Solar Systems
The Solar Alternative: Status and Prospects (NR) **Ji 62**
Industrial Steam Turbines
Experimental Investigation on the Vibratory Characteristics of an Industrial Steam Turbine LP-Runner Blade With Lacing-Wire (81-DET-134) (A) **N 108**

Industrial Study Missions
What Do Japanese Engineers Know That You Don't? (NR) **Mr 80**
Industrial Trucks
Vehicular Operations and New Developments in Unit Handling (80-WA/MH-5) (A) **Ap 96**
Industrial Users
Gasification of Coal for Cooperative Industrial Use (81-IPC-Fu-1) (A) **D 101**
Industrial Wastes
Fuels from Biomass (ES) **F 23**
Industrialized Countries
World Steel Industry Outlook (IF) **My 54**
Industries
Robot Technology (NB) **Ag 63**
Industry
Carcinogens in Industry and the Environment (Pollution Engineering and Technology Series, Vol. 16) (CB) **N 116**
Doe's Fuel Use Regulations: A Cause for Concern **Jl 37**
Energy Conservation in Commerce and Industry (STV) **Je 95**
Government as the Problem (C) **Ap 54**
Powered Hand Tool Efficiency (NB) **Ap 80**
Technically—Write! (CB) **N 116**
Industry Research
NSF Awards Joint Research Grant (EN) **Ja 72**
Inelastic Analysis
Implication of Stress Range for Inelastic Analysis (81-PVP-34) (A) **Ag 82**
Inelastic Conditions
J-Integral Estimation Procedures (81-PVP-10) (A) **Ag 79**
Ineptitude
Death, Injury and Destruction of Property by Design (80-WA/DE-13) (A) **Ap 101**
Inert Gas Generators
Operating on #6 Oil (ES) **N 71**
Inertia
Dynamic Crack Propagation in Very Ductile Materials—The Influence of Inertia (80-WA/PVP-8) (A) **Ja 98**
The Effect of Inertia on Flow Between Misaligned Rotating Disks (80-WA/FE-2) (A) **My 85**
Inertia Forces
The Measurement of Dynamic Normal and Frictional Contact Forces During Sliding (81-DET-40) (A) **O 104**
Inertial Loads
On Predicting Vibrations in Realistically Proportioned Linkage Mechanisms (80-DET-4) (A) **F 118**
Inertial Pressure
The Inertial Pressure Concept (81-Pet-28) (A) **My 91**
Infinite Medium
Crack Path Prediction for a Kinked Crack in the Neighborhood of a Circular Inclusion in an Infinite Medium (81-APM-31) (A) **S 85**
Infinite Solid
Stress Analysis of a Penny-Shaped Crack Located Between Two Spherical Cavities in an Infinite Solid (80-WA/APM-12) (A) **Ja 100**
Infinite Strip
A Semi-Infinite Elastic Strip Bonded to an Infinite Strip (80-WA/APM-13) (A) **Ja 100**
Inflation
Engineers' Salaries—An Update **Mr 40**
Information Management
The Engineer as Information Manager (C) **F 46**
Information Systems
Management of Information Systems (CB) **Ag 85**
Infrared Astronomical Satellite
Sunshade/Radiative Cooler for IRAS Infrared Astronomical Satellite (81-ENAs-3) (A) **S 86**
Infrared Beam
Infrared Sensing Device (IF) **Ja 67**
Infrared Detector Cooling
Magnetic Refrigeration for Spacecraft Systems (81-ENAs-47) (A) **O 101**
Infrared Radiation
Transfer Thermography **O 42**
Infrared Scanner
Infrared Thermography (BTR) **F 54**
Infrared Telescope
Development and Integration of the Infrared Telescope for Spacelab (81-ENAs-16) (A) **S 86**
Ingard, K. U. Locally and Nonlocally Reacting Flexible Porous Layers: A Comparison of Acoustical Properties (80-WA/NC-14) (A) **F 124**
Inhibition Systems
Gas Turbine Vanadium Inhibition (81-GT-187) (A) **Jl 86**
Initial Stress
On the Stability of a Composite Beam With Initial Stress to Moving Loads (81-APM-25) (A) **S 85**
Injection Experiments
Experimental Determination of Lower Plenum ECC Injection Effectiveness (80-WA/HT-60) (A) **My 84**
Injection Molding
Fabrication of Injection Molded Sintered Alpha SiC Turbine Components (81-GT-161) (A) **Jl 86**
Injection Wells
Well Test Analysis for Enhanced Oil Recovery Projects (81-Pet-31) (A) **My 90**
Inleakage
Condenser Provisions for On-Line Detection of Tube Sheet Inleakage (80-JPGC/Pwr-23) (A) **F 118**
Condenser Tube-to-Tube Sheet Joint Inleakage: An Overview (81-JPGC-Pwr-6) (A) **N 110**
Inlet Conditions
Effects of Inlet Conditions and Water Injection on Emissions from a Duel-Fuel Industrial Gas Turbine (81-GT-47) (A) **Je 108**
Inlet Distortions
Theoretical Study of Flow Instabilities and Inlet Distortions in Axial Compressors (81-GT-211) (A) **Jl 90**
Inlet Flow Angle
Short Duration Measurements of Heat Transfer Rate to a Gas Turbine Rotor Blade (81-GT-146) (A) **Jl 85**
Inlet Systems
Field Experience with Gas Turbine Inlet Air Filtration (81-GT-193) (A) **Jl 89**
Inman, D. J. Some Results on the Nature of Eigenvalues of Discrete Damped Linear Systems (80-WA/APM-19) (A) **Ja 101**
Innovations
An Age of Innovation: The World of Electronics, 1930 – 2000 (CB) **Mr 119**
Management of Research and Innovation (Studies in the Management Sciences) (CB) **S 90**
Innovators
The Professor with the Innovative Touch **S 26**
Inorganic Pollutants
A Prism Effect (ES) **O 27**
Inoue, J. Dynamic Stability of a Vibrating Hammer (81-DET-14) (A) **D 88**
Input Pattern
On Attempting to Reduce Undesirable Inertial Characteristics of the Schatz Mechanism (80-DET-79) (A) **Mr 108**
Input Rotation
Analysis of the Double-Link Reverser (80-DET-2) (A) **F 118**
Inserts
Hard-Surface Drill String Stabilizer Design Concept to Accommodate Washover Operations (81-Pet-4) (A) **My 88**
Inservice Examinations
Recent Experience in Inservice Examinations (81-NE-1) (A) **S 81**
In-Situ Calibration
In-Situ Calibration of Flight Heat Transfer Instrumentation (81-ENAs-13) (A) **S 86**
Insolation
Comparison of Several Models for Long-Term Monthly Average Daily Insolation and Horizontal Surfaces and the Estimation of Horizontal Surface Insolation for 16 U.S. Locations (80-WA/Sol-28) (A) **Ap 94**
. . . Sunlight . . . (C) **Ag 42**
Insolation Measurements
On-Site Quality Control of Insolation Measurements (80-WA/Sol-25) (A) **Ap 94**
Instability
Effect of Inter-Modulation and Quasi-Periodic Instability in the Diagnosis of Rolling Element Incipient Defect (81-DET-11) (A) **N 104**
Instability Mechanisms
Instability Mechanisms and Stability Criteria of a Group of Circular Cylinders Subjected to Cross-Flow—Part I: Theory (81-DET-21) (A) **N 104; Part II: Numerical Results and Discussions (81-DET-22) (A) N 105**
Instrument Thermal Design
The Thermal Canister Approach to Instrument Thermal Design (80-ENAs-23) (A) **Mr 112**
Instrumentation Errors
The Use of Mathematical Modeling in the Analysis of Gas Turbine Compressor Unit Test Data (81-GT-217) (A) **Jl 91**
Instrumented Turbines
Utility Considerations for Turbine Supervisory Instrumentation (81-JPGC-Pwr-24) (A) **N 112**
Insulation
A $16 Billion Market (ES) **Ap 29**
Insulation for Conservation (NR) **S 68**
Process Piping Systems (CB) **N 115**
Insulation Materials
Introduction to Design Specification Criteria for Acoustical Insulation (80-WA/NC-10) (A) **F 124**
Insulation Systems
Free and Forced Convective Effects on Air-Permeable Insulation Systems (81-HT-47) (A) **O 97**
Integer Weights
Synthesis of Four-Bar Linkage for Position, Velocity and Acceleration Coordination by Geometric Programming (80-DET-80) (A) **Mr 108**
Integral Boiler
Erosion-Corrosion in the Multisolids Fluidized Bed Combustor, Part II: Burning Coal with Limestone in a 14 × 25-In. Unit with Integral Boiler (80-WA/CD-4) (A) **Ja 97**
Integral Method
Application of the Integral Method to Two-Dimensional Transient Heat Conduction Problems (80-WA/HT-55) (A) **My 84**
Integrated Gasifier
Materials Problems, Fusion, Alternative Fuels, Novel Energy Sources (NR) **My 61**
Integration Schemes
Comparative Study of Direct Numerical Integration Schemes in Linear and Nonlinear Analysis of a Dynamic System (80-WA/DSC-26) (A) **Mr 116**
Intellectual Robots
The Year of the Robot (CB) **Jl 92**
Intelligent Machines
Robotics Institute (EN) **Mr 83**
INTELPOST
The Canadian Connection (NB) **F 65**
Inter-Modulation
Effect of Inter-Modulation and Quasi-Periodic Instability in the Diagnosis of Rolling Element Incipient Defect (81-DET-11) (A) **N 104**
Interactive Graphics
Analysis of a Classical Straight Line Mechanism Using Interactive Graphics (81-DET-105) (A) **N 107**
Historical Highlights of Interactive Computer Graphics **N 32**
Intercooled Commercial Plants
HTGR-GT Systems Optimization Studies (80-WA/GT3) (A) **Ap 102**
Interface Cracks
On Branched, Interface Cracks (81-APM-20) (A) **S 84**
Interface Pressure
Topographical Representation of Interface Pressure Distribution in a Multiple Bolt-Flange Assembly-Measurement by Means of Ultrasonic Waves (81-DE-7) (A) **Ag 78**
Interfacing
Linear-Nonlinear Interface for Finite Element Impact Analysis (81-GT-39) (A) **Je 106**
Interferometry
Space Techniques Adapted for Earth Studies (BTR) **Ap 62**
Intermittent Motion
Dynamic Analysis of Mechanical Systems with Intermittent Motion (81-DET-48) (A) **N 105**
A Logical Function Method for Dynamic and Design Sensitivity Analysis of Mechanical Systems with Intermittent Motion (80-DET-39) (A) **F 121**
Internal Acoustic Fields
On Circular Pipe Wall Vibratory Response Excited by Internal Acoustic Fields (80-WA/NC-13) (A) **F 124**
Internal Design
Aircraft of the Future (NB) **O 76**
Internal Friction
Novel Sterilizing Process (BTR) **D 59**
Internal Geneva Mechanisms
Analysis and Synthesis of Mechanical Error in Geneva Mechanisms—A Stochastic Approach Part 1:

External Geneva Mechanism (80-DET-24) (A) F 120; Part 2: Internal Geneva Mechanism (80-DET-25) (A) F 120

Internal Pressure
Delamination of Layered Cylindrical Shells Under Internal Pressure (80-WA/PVP-7) (A) Ja 98

International Aid
Modest Technologies for a Complicated World (CB) My 92

International Standard
ASME's Boiler and Pressure Vessel Code as an International Standard Ag 69

International Technology
Technology Transfer, Innovation and International Competitiveness (CB) S 90

Interordering
Interordering: A New Method of Component Orientation (Studies in Mechanical Engineering, Vol. 2) (CB) Ag 85

Interpolation
Rockbeds for Comfort Cooling: An Assessment in Several U.S. Cities (80-WA/Sol-8) (A) Ap 93

Interpolators
Reference-Pulse Circular Interpolators for CNC Systems (80-WA/Prod-7) (A) My 82

Interview Feature
"Hands On" Learning at Cal Poly Ap 49

Intuitive Practitioners
The Theory and Practice of Management: Part Art, Part Science (80-WA/Mgt-1) (A) Ja 102

Inventions
Law to Help Close the Patent Gap (NR) Ji 70

Inventors
Expanded Socio-Technical Outlook Urged (C) Ap 55
MacCready Inducted into Inventors Hall of Fame (NB) Mr 81
Nominations Wanted for Inventors Hall of Fame (NR) My 60
Patents Commissioner Promises Operations Overhaul (NR) N 91

Inverse Mode Method
An Inverse Time Marching Method for the Definition of Cascade Geometry (81-GT-167) (A) Ji 87

Inverse System
On the Inverse of a Special Class of Bilinear Systems (80-WA/DSC-13) (A) Mr 115

Inviscid Flow
Rotational Inviscid Flow in a Variable Area Annulus, Pipe or Channel (80-WA/FE-14) (A) My 86

Involuntary Energy Policy
Energy in Transition: A Report on Energy Policy and Future Options (CB) F 128

Ionescu, T. System Analysis and Structural Criteria Concerning Diesel Locomotives (80-DET-105) (A) Mr 110

Ion-Exchange Columns
Ion-Exchange Chromatography Separation Applied to Mineral Recycle in Closed Systems (81-ENAs-21) (A) O 100

Ionizing Radiation
Urge Reduced Exposure from Radiological Technologies (BTR) O 56

Irish Power Stations
Power from Peat: Irish Practice and Cost Data (81-JPGC-Fu-6) (A) D 94

Irradiation
The Effects of Clouds in Modeling Solar Radiation (80-WA/Sol-23) (A) Ap 94

Irradiation Temperatures
Evaluation of Coefficients for the Weighted Sum of Gray Gases Model (81-HT-55) (A) O 97

Irregular Enclosures
Radiation Heat Transfer in an Irregular Enclosure with Axial Flow (81-HT-70) (A) O 98

Irretier, H. Eigenfrequencies and Mode Shapes of a Free-Standing, Twisted, Tapered and Rotating Blade with Respect to an Elastically Supported Root (81-DET-125) (A) N 108

Irrigation
Operational Characterization of the Solar-Thermal Power System Near Willard, N.M. (80-WA/Sol-39) (A) Ap 95

Ishida, F. Transient Torque Produced in Main Shaft of Electric Hoist During Motor Start-Up and Emergency Brake Operations (81-DET-60) (A) N 105

Ishida, T. Analytical Consideration of Fuel Economy and Dynamic Response of a Regenerative High Temperature Automobile Gas Turbine—Part II (81-GT-218) (A) Ji 91

Ishii, M. Theoretical Prediction of Onset of Horizontal Slug Flow (80-WA/FE-6) (A) My 85

Ishii, N. A Vibration Source in Refrigerant Compressors (81-DET-72) (A) O 104

Ismail, F. Special Aspects of Chatter in Milling (81-DET-18) (A) D 89

Isoparametric Finite Element
An Isoparametric Finite Element With Nodal Derivatives (81-APM-1) (A) S 83

Isothermal Cross-Flow
Optimal Design of Bayonet Tube Exchangers for Isothermal Shell-Side Conditions (81-HT-34) (A) O 96

Isothermal Expansion
Thirty Percent Fuel Savings by Adding Combustion Within Gas Turbine (81-JPGC-GT-4) (A) D 94

Isotopes
Gmelin Handbuch der Anorganischen Chemie, 8th Ed. Uran Ergänzungshand A2 (CB) Ap 109
Laser Chemistry (ES) D 25

Isotropic Bearings
A Direct Integration Technique for the Transient Analysis of Rotating Shafts (81-DET-56) (A) D 89

Ispas, I. Aerodynamic Design and Testing of an Improved First-Stage Compressor Rotor for a Heavy-Duty Gas Turbine (81-GT-135) (A) Ji 85

Isaid, N. T. Parametric Resonance Oscillations of Flexible Slender Cylinders in Harmonically Perturbed Axial Flow—Part 1: Theory (80-WA/APM-30) (A) Ja 101; Part 2: Experiments (80-WA/APM-31) (A) Ja 102

Itematic
Order Selection of Full and Broken Case Goods (80-WA/MH-12) (A) Ap 97

Ito, Y. Topographical Representation of Interface Pressure Distribution in a Multiple Bolt-Flange Assembly-Measurement by Means of Ultrasonic Waves (81-DE-7) (A) Ag 78

Itoh, T. Analytical Consideration of Fuel Economy and Dynamic Response of a Regenerative High Temperature Automobile Gas Turbine—Part II (81-GT-218) (A) Ji 91

Iwan, W. D. The Natural Frequencies and Mode Shapes of Cables with Attached Masses (81-Pet-10) (A) My 89

Iwasaki, F. Fundamental Study on Semi-Actively Controlled Pneumatic Servo Suspensions for Rail Cars (81-RT-6) (A) Ag 76

J

J-Integral
J-Integral Estimation Procedures (81-PVP-10) (A) Ag 79
Nondestructive Evaluation of the J and M Integrals (81-APM-2) (A) S 83

Jaczko, G. The Block-Lift in Axial Piston Hydraulic Motors (81-FE-25) (A) S 82

Jackson, L. D. A. Rubber Lined Pipelines—An Overview (80-WA/MH-8) (A) Ap 96

Jackson, T. A. The Evaluation of Fuel Property Effects on Air Force Gas Turbine Engines—Program Genesis (81-GT-1) (A) Je 104

Jacobs, D. Centennial Issue: Kudos and Comments (C) Ja 48

Jacobson, W. Pneumatic Unloading of Ships and Barges (80-WA/MH-10) (A) Ap 97

Jacobus, D. D. Sorry About the Errors (C) F 48

Jahnig, C. E. Thirty Percent Fuel Saving by Adding Combustion Within Gas Turbine (81-JPGC-GT-4) (A) D 94

Jain, V. K. Tooling Design for ECM—A Finite Element Approach (80-WA/Prod-9) (A) My 82

Jain-zhong, X. An Aerothermodynamic Analysis of Transonic Compressor Rotors Containing Three-Dimensional Shocks (81-GT-120) (A) Je 114

Jaini, C. K. C. Synthesis of Two-Degree-of-Freedom Mechanism with Pulse Loading (80-DET-82) (A) Mr 108

Jaklitsch, J. J., Jr. Letter from the Editor (C) Je 62; Thank You All. . . (C) N 73

Jaliwala, S. A. Diesel Engine Governing with Load Feedback (81-DGP-5) (A) My 88

Jaluria, Y. Mixed Convection in a Wall Plume (81-HT-37) (A) O 96; Transient Film Condensation on a Finite Horizontal Plate (81-HT-27) (A) O 95

James, C. R. The Hammer QSD-Quick Stop Device for High-Speed Machining and Rubbing (80-WA/Prod-13) (A) My 82

James, L. A. The Effect of Product Form Upon Fatigue-Crack Growth Behavior in Alloy 718 (81-Mat-1) (A) O 102

Jankowski, F. Heat Transfer in a Periodic Boundary Layer Near an Axisymmetric Stagnation Point on a Circular Cylinder (81-GT-92) (A) Je 112

Janna, W. S. Drop-Size Distributions of Newtonian and Bingham Liquid Sprays Produced by Fan-Jet Pressure Nozzles With and Without the Preorifice (81-PID-3) (A) My 86

Janssen, J. E. Elections to Fellow Grade Ag 74

Japanese Engineers
What Do Japanese Engineers Know That You Don't? (NR) Mr 80

Japanese Industries
Human Resources in Japanese Industrial Development (CB) My 93

Japanese Literature
Japanese Scientific and Technical Literature: A Subject Guide (CB) N 115

Jarosch, J. Experimental Investigation on the Vibratory Characteristics of an Industrial Steam Turbine LP-Runner Blade With Lacing-Wire (81-DET-134) (A) N 108

Jaske, C. E. Long-Life Fatigue of Type 316 Stainless Steel of Temperatures Up to 593°C (81-Mat-2) (A) O 102

Jaung, R. Free and Forced Convective Effects on Air-Permeable Insulation Systems (81-HT-47) (A) O 97

Jaw, L. LNG Cogeneration Power Station (81-JPGC/Pwr-11) (A) F 117

Jaworowski, R. J. Predicting the Effect of Fly Ash Resistivity Modification on Precipitator Collection Efficiency (81-JPGC-Fu-3) (A) D 93

Jaws
Remote Mechanical Hand (BTR) Ja 61

Jay, A. Effect of Time-Dependent Flight Loads on Turbofan Engine Performance Deterioration (81-GT-203) (A) Ji 90

Jay, R. L. Time-Variant Aerodynamics of High-Turning Blade Elements (81-GT-123) (A) Je 114

Jean, M. Protection of Continuous Structures Against Vibrations by Active Damping (81-DET-88) (A) N 106

Jeffcott Rotors
Comparison of the Unbalance Responses of Jeffcott Rotors with Shaft Bow and Shaft Runout (81-DET-47) (A) D 89

Jen, H. F. Cooling Air Flow Characteristics in Gas Turbine Components (81-GT-76) (A) Je 110

Jenkins, P. E. Blading Heat Transfer Considerations in a Reheat-Gas-Turbine Combined Cycle (81-GT-155) (A) Ji 88; Comparisons of the HTTT Reheat-Gas-Turbine Combined Cycle with the HTTT Nonreheat Gas-Turbine Combined Cycle (81-GT-69) (A) Je 109

Jenkins, S. D. The Technical/Economic Issues and Reliability Requirements for Tampa Electric Company's Big Bend Unit #4 FGD System (81-JPGC-Pwr-35) (A) D 93

Jennings, C. W. Thoughts on Freedom (C) Ja 49

Jet Arrays
Streamwise Flow and Heat Transfer Distributions for Jet Array Impingement with Crossflow (81-GT-77) (A) Je 110

Jet-Boundary Interaction
Two-Dimensional Turbulent Offset Jet-Boundary Interaction (80-WA/FE-12) (A) My 85

Jet Engine Maintenance
Improved Jet Engine Maintenance Through Automated Vibration Diagnostic Systems (81-GT-62) (A) Je 109

Jet Engine Testing
Noise Suppressors for Jet Engine Testing (80-ENAs-28) (A) Mr 112

Jet Engines
Giant Engine Simulator (ES) Je 24
Jets Inspected with Neutrons (BTR) My 50

Jet-Pipe
Measurements in a Pipe Flow Issuing Perpendicularly into a Cross Stream (80-WA/HT-24) (A) **Ap 104**
Jezequel, L. Structural Damping by Slip in Joints (81-Det-139) (A) **D 92**
Jiji, L. M. A Three-Dimensional Air-Vapor-Droplet Local Interaction Model for Spray Units (81-HT-16) (A) **O 94**; Two-Dimensional Turbulent Offset Jet-Boundary Interaction (80-WA/FE-12) (A) **My 85**
Ji-lian, R. The Quantitative Analysis of Three-Dimensional Displacement Fields by Single Laser Hologram (81-GT-215) (A) **Jl 91**
Jindai, K. Fundamental Study on Semi-Actively Controlled Pneumatic Servo Suspensions for Rail Cars (81-RT-6) (A) **Ag 76**
Jin-sheng, Y. An Aerothermodynamic Analysis of Transonic Compressor Rotors Containing Three-Dimensional Shocks (81-GT-120) (A) **Je 114**
Ji-sheng, Z. The Quantitative Analysis of Three-Dimensional Displacement Fields by Single Laser Hologram (81-GT-215) (A) **Jl 91**
Job Opportunities
Economic Outlook Promising for Many College Grads (EN) **F 66**
Job Placements
Placement of Engineering and Technology Graduates (EN) **Mr 82**
Jobs
Job Changing and Income (EN) **Ap 82**
Jogow, R. B. The Development of a Space Shuttle Research Animal Holding Facility (80-ENAs-39) (A) **Mr 113**
Johansson, T. *(author)* Radioactive Waste from Nuclear Power Plants (CB) **D 102**
John, J. E. A. Drop-Size Distributions of Newtonian and Bingham Liquid Sprays Produced by Fan-Jet Pressure Nozzles With and Without the Preorifice (81-PID-3) (A) **My 86**
Johnson, C. C. Ion-Exchange Chromatography Separation Applied to Mineral Recycle Separation Applied to Mineral Recycle in Closed Systems (81-ENAs-21) (A) **O 100**
Johnson, E. K. Low-Btu Gas From an Environmentally Clean Pellet Fuel (80-WA/Fu-2) (A) **F 128**
Johnson, J. E. A History of the Naval Research Laboratory Contributions to Submarine Life Support Systems (80-ENAs-29) (A) **Mr 112**
Johnson, K. L. Applications of Improved Technology to a Preprototype Vapor Compression Distillation (VCD) Water Recovery Subsystem (81-ENAs-10) (A) **S 86**
Johnson, R. E. Unit Train Coal Car Design Considerations (81-RT-3) (A) **Ag 77**
Johnston, J. P. A Prediction Method for Planar Diffuser Flows (81-FE-5) (A) **Ag 83**
Joint Axes
Determination of Extreme Distances of a Robot Hand—Part 1, A General Theory (80-DET-57) (A) **Mr 107**; Part 2, Robot Arms with Special Geometry (80-DET-58) (A) **Mr 106**
Joint Freedoms
Planar Polar Stress Elements with Regular and Irregular Joint Freedoms for Mechanical Design (80-DET-71) (A) **Mr 107**
Joints
Connection Force Analysis of Mechanisms Described by Explicit Equations of Motion in Generalized Coordinates (80-DET-75) (A) **Mr 108**
The Damping of Structural Vibration by Controlled Interfacial Slip in Joints (80-DET-86) (A) **N 108**
Structural Damping by Slip in Joints (81-DET-139) (A) **D 92**
System Approach to the Thermal Behavior and Deformation of Machine Tool Structures in Response to the Effect of Fixed Joints (80-WA/Prod-14) (A) **My 83**
Tube to Tubesheet Joint Strengths (81-JPGC-Pwr-7) (A) **N 110**
Joly, R. Influence of Restoring Torque Between Truck and Car-Body on the Transversal Stability of a Railway Car at Seven, Seventeen and Nine Degrees of Freedom (81-DET-41) (A) **O 104**
Jones, B. G. Turbulent Pressure-Velocity Measurements in a Fully Developed Concentric Annular Air Flow (81-DET-23) (A) **D 89**
Jones, C. E. Challenges For Sections: Are You Prepared (Ed) **Mr 35**; The Intangible Benefits (Ed) **F 21**; The International Scene: Benefits and Responsibilities (Ed) **My 17**; Looking Back, Yet Forward (Ed) **Je 12**; Technical Divisions: Are You Doing Enough for Industry? (Ed) **Ap 27**; Turning Points (Ed) **Ja 19**
Jones, C. T. Influences of Thermal Propeties on Distortion of High-Energy Laser Mirrors (81-HT-31) (A) **O 95**
Jones, D. Performance of Solar Collectors—An Evaluation of Standard Ratings (80-WA/Sol-1) (A) **Ap 92**
Jones, D. I. G. A Parametric Study of Dynamic Response of a Discrete Mode of Turbomachinery Bladed Disk (81-DET-137) (A) **D 91**
Jones, F. Digital Bispectral Analysis of Nonlinear Wave Couplings in Fluids (81-FE-32) (A) **S 83**
Jones, G. L. Classification of Clamp-Induced Stresses in Thin-Walled Pipe (81-PVP-17) (A) **Ag 80**
Jorgensen, P. Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) (A) **Ag 82**
Jorgensen, R. A Comparison of Two Alternative Methods for Defining Fan Performance (80-WA/PTC-1) (A) **Ap 101**
Joshi, N. Free and Forced Convective Effects on Air-Permeable Insulation Systems (81-HT-47) (A) **O 97**
Joslyn, H. D. An Investigation of Axial Compressor Rotor Aerodynamics (81-GT-56) (A) **Je 108**
Joubert, J. I. Coal-Oil Mixtures: A Near-Term Approach to Conserving Petroleum (81-Pet-22) (A) **My 90**
Journal-Bearing Separation
On the Prediction of Journal-Bearing Separation in High Speed Mechanisms with Clearances (80-WA/DSC-36) (A) **Mr 117**
Journal Bearings
Dynamic Analysis of Rocking Journal Bearings with Multiple Offset Segments (81-Lub-34) (A) **D 98**
Empirical Design Procedure for the Thermohydrodynamic Behavior of Journal Bearings (81-Lub-19) (A) **D 97**
Finite Journal Bearing with Nonlinear Stiffness and Damping. Part 1: Improved Mathematical Models (81-DET-51) (A) **D 89**; Part 2: Stability Analysis (81-DET-52) (A) **N 105**
Instability of Rotors in Fluid Film Bearings (81-DE-6) (A) **Ag 78**
Observation of Pressure Variation in the Cavitation Region of Submerged Journal Bearings (81-Lub-11) (A) **D 96**
Optimum Journal Bearing Parameters for Minimum Rotor Unbalance Response in Synchronous Whirl (81-DET-55) (A) **N 105**
A Rapid Determination of Journal Bearing Characteristics Under Combined Loading (80-DET-62) (A) **Mr 107**
Journal Vibrations
Method of Determining Locations of Unbalances in Rotating Machines (81-DET-12) (A) **D 88**
Joyner, L. L. Control of a Nuclear Power Plant with Once-Through Steam Generators (80-WA/DSC-24) (A) **Mr 115**
Jumping Disk
Mechanics in Action at Toronto IUTAM (NR) **Ja 70**
Junctions
Theoretical and Experimental Investigation of Stress Waves at a Junction of Three Bars (81-APM-16) (A) **S 84**
Jur, T. A. Investigation of the Failure of a Large Gearset (80-WA/DE-15) (A) **Ap 101**
Juricic, D. Dynamic Response of a Rectangular Plate with Initial Imperfections Under Large In-Plane Forces (81-DET-80) (A) **D 90**
Justice, N. A. A Versatile Microprocessor Controller for Low-Cost Helicopter Applications (81-GT-137) (A) **Jl 85**

K

Kabasawa, W. Embrittlement of 1¼ Cr-½ Mo Steels in High-Temperature Service (81-Mat-3) (A) **O 102**
Kacker, S. C. A Mean Line Prediction Method for Axial Flow Turbine Efficiency (81-GT-58) (A) **Je 109**
Kafyeke, F. Application of a Fast Pseudo-Unsteady Method to Steady Transonic Flows in Turbine Cascades (81-GT-124) (A) **Je 113**
Kajita, S. Combustion of Methanol and Liquefied Butane in a Gas Turbine Combustor (81-GT-50) (A) **Je 108**
Kakehi, Y. Fundamental Study on Semi-Actively Controlled Pneumatic Servo Suspensions for Rail Cars (81-RT-6) (A) **Ag 76**
Kakretz, A. E., Jr. Elections to Fellow Grade **O 92**
Kalpakjian, S. Experimental Investigation of the Effect of System Rigidity on Wear and Friction-Induced Vibrations (81-Lub-3) (A) **D 95**
Kane, D. W. Storm Over S-T View (C) **Ja 50**
Kanki, H. Experimental Research on the Hydraulic Excitation Force on the Pump Shaft (81-DET-71) (A) **O 104**; Transverse Vibrations of a General Cracked-Rotor Bearing System (81-DET-45) (A) **D 89**
Kannatey-Asibu, E., Jr. Quantitative Relationships for Acoustic Emission from Orthogonal Metal Cutting (80-WA/Prod-26) (A) **My 84**
Kannel, J. W. Flange Loads Measurements in a Cylindrical Roller Bearing (81-Lub-18) (A) **D 97**
Kanninen, M. F. A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part I: J-Integral Analysis (80-WA/PVP-3) (A) **Je 98**; Part II: Experimental Verification on a Type 304 Stainless Steel Pipe (80-WA/PVP-4) (A) **Je 98**
Kao, S. Assessment of Linear Spectral Analysis Method for Offshore Structures Via Random Sea Simulation (81-Pet-9) (A) **My 89**
Kaplan, H. Firefighters Integrated Response Equipment System, Phase II (81-ENAs-42) (A) **O 101**
Kaplan Turbine
Kaplan Turbine Named Landmark (NR) **Ap 74**
Kapoor, S. G. Explicit Identification of Machine Tool Structure and Cutting Process Using Bivariate Time Series Models (80-WA/Prod-27) (A) **My 84**
Kapsch, R. J. HAER's Landmark Contributions (C) **O 51**
Karabin, M. E. Implication of Stress Range for Inelastic Analysis (81-PVP-34) (A) **Ag 82**
Karchon, A. Gemini T-20G-8 XM1 Tank APU (81-GT-81) (A) **Je 110**
Karel, M. Treatment of CELSS and PCELSS Waste to Produce Nutrients for Plant Growth (81-ENAs-19) (A) **O 100**
Karihaloo, B. L. Approximate Description of Crack Kinking and Curving (81-APM-22) (A) **S 85**
Karim, G. A. An Analytical Examination of the Behavior of Oil Sand Fragments in Heated Streams (80-WA/HT-33) (A) **Ap 105**
Karlsson, R. I. Turbulence Structure and Skin Friction in Turbulent Boundary Layers on Irregularly Rough Surfaces (81-FE-35) (A) **S 83**
Karmel, A. Evaluation of Time-Duration Dependent Wheel Load Criteria for Wheelclimb Derailment (80-WA/DSC-21) (A) **Mr 116**
Karnopp, D. Bond Graph Structural Models for Heat Exchangers (80-WA/Sol-17) (A) **Ap 94**
Kasagi, N. Studies of Full-Coverage Film Cooling Part 1: Cooling Effectiveness of Thermally Conductive Wall (81-GT-37) (A) **Je 107**; Part 2: Measurement of Local Heat Transfer Coefficient (81-GT-38) (A) **Je 106**
Kasai, K. Fundamental Study on Semi-Actively Controlled Pneumatic Servo Suspensions for Rail Cars (81-RT-6) (A) **Ag 76**
Kato, S. A Method to Measure Contact Pressure between Metallic Surfaces by Changes in Surfaces Roughness (80-WA/Prod-18) (A) **My 83**; Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part 1: Plain Milling with a Single-Toothed Helical Cutter (80-WA/Prod-4) (A) **My 82**; Part 2: Plain Milling with a Multitoothed Helical Cutter (80-WA/Prod-5) (A) **My 82**
Kato, T. A Method to Measure Contact Pressure between Metallic Surfaces by Changes in Surfaces Roughness (80-WA/Prod-18) (A) **My 83**
Katz, L. Development and Integration of the Infrared Telescope for Scacelab (81-ENAs-16) (A) **S 86**

Kaufmann, R. Design and Control Strategies for CELSS; Integrating Mechaniatic Paradigms and Biological Complexities (81-ENAs-43) (A) **O 100**

Kaul, R. K. Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plane Strain, Numerical Results (80-WA/APM-3) (A) **Ja 99**

Kaustinen, O. M. Pipelining Gas from the Canadian High Arctic (81-Pet-20) (A) **My 90**

Kawada, H. *(author)* Human Resources in Japanese Industrial Development (CB) **My 93**

Kawaguchi, N. Optimum Strut-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) (A) **Ag 83**

Kawata, Y. Experimental Research on the Hydraulic Excitation Force on the Pump Shaft (81-DET-71) (A) **O 104**

Kawatani, T. Experimental Research on the Hydraulic Excitation Force on the Pump Shaft (81-DET-71) (A) **O 104**

Kaza, K. R. V. Aeroelastic Characteristics of a Cascade of Mistuned Blades in Subsonic and Supersonic Flows (81-DET-122) (A) **N 108**

Kazarian, L. E. The Classification of Spinal Column Deformities Resulting from Aircraft Ejection Forces (80-ENAs-44) (A) **Mr 113**

Keane, M. Power from Peat: Irish Practice and Cost Data (81-JPGC-Fu-6) (A) **D94**

Keer, L. M. Approximate Description of Crack Kinking and Curving (81-APM-22) (A) **S 85;** Elastodynamic Analysis of an Edge Crack (80-WA/APM-6) (A) **Ja 100;** A No-Slip Edge Crack on a Bimaterial Interface (80-WA/APM-14) (A) **Ja 100**

Kelley, J. K. Use of Freeze Conditioning Agents and a Thawing Product on Coal (80-JPGC-Fu-5) (A) **Ja 98**

Kelly, J. T. Recent Pilot-Scale Development of a Low-NO_x, "Air-on-Wall" Corner-Fired Combustion System (81-JPGC-APC-4) (A) **D 100**

Kelly, R. D. Use of Freeze Conditioning Agents and a Thawing Product on Coal (80-JPGC/Fu-5) (A) **Ja 98**

Ke-ming, L. Effect of Casing Treatment on Performance of a Three-Stage L. P. Compressor (81-GT-159) (A) **Jl 86**

Kendall, H. W. *(editor)* Energy Strategies: Toward a Solar Future (CB) **F 128**

Kendell, R. Full-Authority Digital Electronic Controls for Civil Aircraft Engines (81-GT-139) (A) **Jl 85**

Kennedy, F. K. Single Pass Rub Phenomena—Analysis and Experiment (81-Lub-55) (A) **D 100**

Kennedy, M. J. Comparison of Liquid Solar Thermal Storage Subsystems in the National Solar Data Network (80-WA/Sol-36) (A) **Ap 95**

Kennedy, W. C. Energy Efficient Muffler for Reduction of Exhaust Noise Generated by a Pneumatic Grinder (80-WA/NC-9) (A) **F 124;** Experimental Investigation into the Physics of Arc-Air Metal Gouging Noise Generation (80-WA/NC-12) (A) **F 124;** Sources of Noise Produced During Pneumatic Chipping Hammer Operation (80-WA/NC-11) (A) **F 124**

Kennett, A. K. Predicting Trajectories and Concentrations of Particles in a Grinding Booth (81-FE-23) (A) **S 82**

Kesselring, J. P. Development of a Small-Scale Catalytic Gas Turbine Combustor (81-GT-43) (A) **Je 106**

Kestin, J. *(editor)* Sourcebook on the Production of Electricity from Geothermal Energy (CB) **O 107**

Kettleborough, C. F. The Adiabatic Adsorption-Desorption Characteristics of Silica Gel Beds—Part 1: Theory (80-WA/Sol-30) (A) **Ap 94;** Part 2: Curve Fits (80-WA/Sol-31) (A) **Ap 94;** Solar Assisted Desiccant Dehumidification and Cooling with an Indirect Evaporative Cooler (80-WA/Sol-29) (A) **Ap 94**

Kettler, D. J. Coal-Fired Unit Size Selection . . . Is Bigger Better? (81-JPGC-Pwr-34) (A) **D 93**

Kettles, T. L. Can ASME Take Consensus Stands? (C) **My 43**

Key Materials
Critical Materials—A New Dimension (81-GT-61) (A) **Je 109**

Keyes, M. A. Centennial Issue: Kudos and Comments (C) **Ja 48;** Energy Conservation Through Process Modification and Control (81-PID-2) (A) **My 86**

Khader, M. S. Transient Laminar Mixed Convection from a Moving Vertical Plate (81-HT-40) (A) **O 96**

Khalifa, H. E. Gas-Turbine-Topped Hybrid Power Plants for the Utilization of Geopressured Geothermal Resources (81-Pet-5) (A) **My 88**

Khan, M. R. Finite Element Quasi-Static Deformation Analysis of Planar Mechanisms with External Loads Using Static Condensation (81-DET-104) (A) **N 107**

Khan, R. A. Synthesis of Four-Bar Linkage for Position, Velocity and Acceleration Coordination by Geometric Programming (80-DET-80) (A) **Mr 108**

Khan, S. Fracture Mechanics Model for Pittsburgh Coal (81-Pet-16) (A) **My 90**

Khatib-Rahbar, M. An Analysis of the Steady-Power Natural Circulation Experiments in LMFBR Plants (80-WA/HT-41) (A) **Ap 106**

Khoo, P. S. H. On Attempting to Reduce Undesirable Inertial Characteristics of the Schatz Mechanism (80-DET-79) (A) **Mr 108**

Khoshaim, B. H. On Wind-Tunnel Simulation of Desert Atmospheric Conditions for Sand Dune Studies (81-FE-8) (A) **Ag 83**

Kichko, R. D. Plastic Strain Concentrations in Perforated Structures Subjected to Alternating Loads (81-PVP-22) (A) **Ag 80**

Kielb, R. E. Aeroelastic Characteristics of a Cascade of Mistuned Blades in Subsonic and Supersonic Flows (81-DET-122) (A) **N 108**

Kiernan, J. G. LM2500 Gas Turbines for Mobil Statfjord B Platform—the North Sea (81-GT-172) (A) **Jl 87**

Kiln Incineration
Regional Facilities for Hazardous Waste Disposal (80-WA/MH-13) (A) **Ap 97**

KILnGAS Coal Gasification
KILnGAS Coal Gasification: An Idea Whose Time Has Come (81-JPGC-Fu-5) (A) **D 94**

Kilograms
More Metric Musings (C) **D 57**

Kim, C. Interactions Between Dynamic Normal and Frictional Forces During Unlubricated Sliding (81-Lub-15) (A) **D 97**

Kim, C-H. The Measurement of Dynamic Normal and Frictional Contact Forces During Sliding (81-DET-40) (A) **O 104**

Kim, Y. C. Digital Bispectral Analysis of Nonlinear Wave Couplings in Fluids (81-FE-32) (A) **S 83**

Kimbrell, J. E. A Classification of Coupler-Line Envelopes From Hinged Four-Bar Linkages (80-DET-42) (A) **F 121**

Kimura, T. Combustion of Methanol and Liquefied Butane in a Gas Turbine Combustor (81-GT-50) (A) **Je 108;** Preliminary Study on Reheat Combustor for Advanced Gas Turbine (81-GT-29) (A) **Je 106**

Kinematic Analysis
Kinematic Analysis of Plate Cam Profiles Not Analytically Defined (80-DET-12) (A) **F 119**
On the Kinematics of the Closed Epicyclic Differential Gears (81-DET-111) (A) **N 107**
A State Space Method for Kinematic Optimization of Mechanisms and Machines (80-DET-43) (A) **F 121**

Kinematic Arguments
Kinematic and Dimensional Arguments on Derivative Skewness in Turbulent Shear Flows (81-FE-30) (A) **S 82**

Kinematic Chains
Linkage Characteristic Polynomials: Definitions, Coefficients by Inspection (80-DET-8) (A) **Mr 106**

Kinematic Characteristics
Determination of the Kinematic Characteristics of a Mechanism with a Variable Length Connecting Rod (80-DET-35) (A) **F 120**

Kinematic Correction
Kinematic Correction for Roller Skewing (80-DET-76) (A) **Mr 108**

Kinematic Mappings
Kinematic Mappings Part 1: Classification of Algebraic Motions in the Plane (80-DET-16) (A) **F 119;** Part 2: Rational Algebraic Motions in the Plane (80-DET-17) (A) **F 119**

Kinematic Mechanisms
Connection Force Analysis of Mechanisms Described by Explicit Equations of Motion in Generalized Coordinates (80-DET-75) (A) **Mr 108**

Kinematic Modelling
A Technique for Kinematic Modelling of Anatomical Joints (80-DET-84) (A) **Mr 109**

Kinematic Pair
Analysis and Synthesis of a Three-Link Linkage with an Intermediate Higher Kinematic Pair (80-DET-94) (A) **Mr 109**

Kinematic Properties
Instantaneous Kinematics of Multiple-Degree-of-Freedom Motions (80-DET-53) (A) **Mr 106**

Kinematic Synthesis
Kinematic Synthesis of an Adjustable Six-Bar Angular-Motion Compensator (80-DET-10) (A) **F 118**

Kinetic Energy
Gentle Arrestor (BTR) **Jl 57**

Kinetic Energy Storage
The Simultaneous Analytical Synthesis of Mass and Spring Elements in Planar Mechanisms (80-DET-50) (A) **Mr 106**

Kineto-Elastodynamic Analysis
Kineto-Elastodynamic Analysis of Mechanisms by Finite Element Formulations (80-DET-103) (A) **Mr 110**

King, G. G. Design of Carbon Dioxide Pipelines (81-Pet-34) (A) **My 91**

King, M. J. Roughness Characteristics of Plane Surfaces Based on Velocity Similarity Laws (81-FE-34) (A) **S 83**

King, R. B. Nondestructive Evaluation of the J and M Integrals (81-APM-2) (A) **S 83**

Kingsbury, E. Ball-Ball Load Carrying Capacity in Retainerless Angular-Contact Bearings (81-Lub-47) (A) **D 99**

Kingsbury, E. P. Slip Measurement in an Angular Contact Ball Bearing (81-Lub-33) (A) **D 98**

Kington, H. L. Material, Design, and Test Aspects of Ceramic Component Development (81-GT-179) (A) **Jl 88**

Kinked Cracks
Crack Path Prediction for a Kinked Crack in the Neighborhood of a Circular Inclusion in an Infinite Medium (81-APM-31) (A) **S 85**

Kipp, H. W. In-Situ Calibration of Flight Heat Transfer Instrumentation (81-ENAs-13) (A) **S 88**

Kippenhan, C. J. Computation of Radiation View Factors for Surfaces with Obstructed Views of Each Other (81-HT-57) (A) **O 98**

Kirchmeier, W. E. Designing for Three Parallel ID Fan Operation (81-JPGC-Pwr-8) (A) **N 111**

Kirchner, W. L. De-Entrainment on Vertical Elements in Air Droplet Cross Flow (80-WA/HT-46) (A) **Ap 106**

Kirk, J. A. Wear and Friction of Nitrogen Ion Implanted Steel (81-Lub-20) (A) **D 97**

Kirk, R. G. Analysis and Identification of Subsynchronous Vibration for a High Pressure Parallel Flow Centrifugal Compressor (80-DET-57) (A) **N 105;** Four Pad Tilting Pad Bearing Design and Application for Multistage Axial Compressors (81-Lub-12) (A) **D 96**

Kissinger, L. D. The Factors Influencing the Formation of Li_2CO_3 from LiOH and CO_2 (80-ENAs-45) (A) **Mr 114**

Kistler, B. L. Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (80-WA/PVP-6) (A) **Ja 98**

Kitajima, J. Combustion of Methanol and Liquefied Butane in a Gas Turbine Combustor (81-GT-50) (A) **Je 108;** Preliminary Study on Reheat Combustor for Advanced Gas Turbine (81-GT-29) (A) **Je 106**

Klapatch, R. D. Methanol Combustion in a 26-MW Gas Turbine (81-GT-64) (A) **Je 109**

Klein, R. H. Doe's Fuel Use Regulations: A Cause for Concern **Jl 37**

Kleiner, G. N. Development of an Advanced Sabatier CO_2 Reduction Subsystem (81-ENAs-11) (A) **S 86**

Klett, D. E. Comparison of Several Models for Long-Term Monthly Average Daily Insolation and Horizontal Surfaces and the Estimation of Horizontal Surface Insolation for 16 U.S. Locations (80-WA/Sol-28) (A) **Ap 94**

Kilalas, Y. Measurements of Effective Thermal Conductivity and Evaporative Heat Loss in Granular Porous Media (81-HT-58) (A) **O 98**

Klijn, A. J. Re-Examination of Design Criteria for

Natural Gas Compressor Station "Ravenstein"—Holland (81-GT-188) (A) **Jl 88**

Kline, S. J. A Prediction Method for Planar Diffuser Flows (81-FE-5) (A) **Ag 83**

Klompas, N. Mechanical, Thermal and Hydraulic Design of a Composite Construction Water-Cooled Gas Turbine Nozzle (81-JPGC-GT-3) (A) **D 95**

Klotz, S. P. Comparison of Profiles and Fluxes of Heat and Momentum Above and Below an Air-Water Interface (80-WA/-HT-68) (A) **Ap 107**

Knapp, R. H. Torque and Stress Balanced Design of Helically Armored Cables (80-WA/OCE-1) (A) **Mr 118**

Knoke, G. S. Hydraulic Borehole Mining (81-Pet-6) (A) **My 89**

Knowland, W. E. *(editor)* Energy in the Developing World: The Real Energy Crisis (CB) **Ap 109**

Ko, F. Development of Multi-Bar Weft-Insert Warp Knit Glass Fabrics for Industrial Applications (80-Tex-7) (A) **F 123**

Kobayashi, A. S. Ductile Axial Crack Extension in Pipes (80-WA/PVP-5) (A) **Ja 98;** Dynamic Crack Propagation in Very Ductile Materials—The Influence of Inertia (80-WA/PVP-8) (A) **Ja 98;** Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (80-WA/PVP-6) (A) **Ja 98;** Impacted Notch Bend Specimens (81-PVP-14) (A) **Ag 79**

Kobayashi, Y. A LH2 Engine Fuel System on Board—Cold GH2 Injection into Two-Stroke Engine with LH2-Pump (81-HT-81) (A) **O 99**

Kober, A. E. Chemically Induced Slagging to Improve Superheat/Reheat Temperature (80-JPGC/Fu-1) (A) **Ja 98**

Koch, C. C. Stalling Pressure Rise Capability of Axial Flow Compressor Stages (81-GT-3) (A) **Je 104**

Koenig, D. T. Interrelationships Between Methods Engineering and Producibility Engineering (81-DE-3) (A) **Ag 77**

Koester, R. D. Experience with In-Service Water Cleaning of Boiler Fireside Deposits (80-JPGC/Fu-6) (A) **Ja 99**

Koffmann, E. Storm Over S-T View (C) **Ja 50**

Kohan, A. L. *(author)* Boiler Operator's Guide, 2nd Ed. (CB) **D 102**

Kojima, T. Optimum Strut-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) (A) **Ag 83**

Kollmann, F. G. A Numerical Solution of the Thermal Elastohydrodynamic Lubrication in an Elliptical Contact (81-Lub-29) (A) **D 97**

Komanduri, R. On the Mechanics of Chip Segmentation in Machining (80-WA/Prod-3) (A) **My 82**

Kops, L. System Approach to the Thermal Behavior and Deformation of Machine Tool Structures in Response to the Effect of Fixed Joints (80-WA/Prod-14) (A) **My 83**

Koren, Y Adaptive Control Optimization of Grinding (80-WA/Prod-12) (A) **My 82;** Reference-Pulse Circular Interpolators for CNC Systems (80-WA/Prod-7) (A) **My 82**

Koroyannakis, D. Flow-Induced Vibrations of Heat Exchanger U-Tubes, A Simulation to Study the Effects of Asymmetric Stiffness (81-DET-20) (A) **D 89**

Korst, H. H. Some Anomalies in the Boundary Layer and Friction Drag Characteristics of Streamwise Corrugated Walls at Transonic and Supersonic Freestream Velocities (81-FE-37) (A) **S 83**

Kosky, K. Electric Generation Utilizing Two-Stroke Crosshead Marine Diesel Engines with Rankine Bottoming Cycle (81-DGP-2) (A) **My 87**

Koslin, M. E. A Monitor for Atmospheric Composition and Contaminants in Closed Environments (80-ENAs-35) (A) **Mr 113**

Kosugi, I. Hydraulic Resistance Effects on Hydraulic Elevator (80-DET-112) (A) **Mr 110**

Kotas, J. F. Design and Evaluation of a Computer Controlled Solar Collector Simulator (80-WA/Sol-6) (A) **Ap 92**

Kotb, M. Suspension Bounce Response of Canadian Maglev Vehicle Under Guideway Excitations, Part I: Deterministic Analysis (81-DET-81) (A) **D 90;** Part II: Stochastic Modeling and Analysis (81-DET-82) (A) **D 90**

Kottke, J. J. Detection of a Transverse Crack in a Turbine Shaft—The Oak Creek Experience (81-JPGC-Pwr-19) (A) **N 112**

Kovac, J. Continuous Miner Noise (80-WA/NC-4) (A) **F 123;** An Investigation of the Mechanics and Noise Associated with Coal Cutting (80-WA/NC-1) (A) **F 123**

Kovach, C. W. The Development of Sea-Cure Condenser Tubing (Crucible SC-1) (81-JPGC-Pwr-3) (A) **N 111**

Kovats, A. Plus ça change, plus c'est la même seal (C) **Ja 49**

Kowalski, G. J. An Analytical and Experimental Investigation of the Heat Transfer Mechanisms within Fibrous Media Exposed to Solar Radiation (81-GT-41) (A) **96;** An Experimental Investigation of the Convective Heat Transfer Mechanisms within a Fur Layer (80-WA/HT-28) (A) **Ap 105**

Kozak, J. Control Systems for CANDU PHW Reactors: Review of Design Philosophy and Principles of Control (80-WA/DSC-16) (A) **Mr 115**

Kozak, L. Conceptual Design of 100 Percent External Turbine Bypass Systems (80-JPGC/Pwr-19) (A) **F 117;** Utility Considerations for Turbine Supervisory Instrumentation (81-JPGC/Pwr-24) (A) **N 112**

Kraemer, K. L. *(author)* Management of Information Systems (CB) **Ag 85**

Krafft, J. M. Editor, Retiring (C) **N 73**

Krahula, J. L. Linear-Nonlinear Interface for Finite Element Impact Analysis (81-GT-39) (A) **Je 106**

Krain, H. A Study on Centrifugal Impeller and Diffuser Flow (81-GT-9) (A) **Je 104**

Kramer, F. W. Storm Over S-T View (C) **Ja 51**

Kramer, S. Complex Number Synthesis of Four-Bar Path Generating Mechanisms Adjustable for Multiple Tangential Circular Arcs (80-DET-77) (A) **Mr 108**

Kranzberg, M. Technology's the Answer, But That's Not the Question **S 38**

Kratz, J. L. Shell-and-Tube Heat Exchanger Failures in Feedwater Heaters, Condensers, and Other Heat Exchangers (81-JPGC/Pwr-1) (A) **N 110**

Krause, H. H. Erosion-Corrosion in the Multisolids Fluidized Bed Combustor, Part II: Burning Coal With Limestone in a 14 × 25-In. Unit with Integral Boiler (80-WA/CD-4) (A) **Ja 97;** Refuse-Derived Fuels (80-JPGC/Fu-2) (A) **Ja 99**

Krauter, A. I. Measurement of Oil Film Thickness for Application to Elastomeric Stirling Engine Rod Seals (81-Lub-9) (A) **D 96**

Kreider, J. F. *(editor)* Solar Energy Handbook (CB) **Je 116**

Kreith, F. Heat Transfer and the Future of Solar Energy Utilization (80-WA/Sol-41) (A) **Ap 95;** Solar Energy Handbook (CB) **Je 116**

Krempl, E. The Rate (Time)-Dependent Behavior of Ti-7Al-2Cb-1Ta Titanium Alloy at Room Temperature Under Quasi-Static Monotonic and Cyclic Loading (81-APM-7) (A) **S 84**

Krey, G. LNG Cogeneration Power Station (80-JPGC/Pwr-11) (A) **F 117**

Krill, W. V. Development of a Small-Scale Catalytic Gas Turbine Combustor (81-GT-43) (A) **Je 106**

Krivokapich, G. A. Operational Characterization of the Solar-Thermal Power System Near Willard, N. M. (80-WA/Sol-39) (A) **Ap 95**

Krockow, W. Low Emissions Silo Combustor (81-GT-46) (A) **Je 107**

Kroll, J. A Comparison of Two Alternative Methods for Defining Fan Performance (80-WA/PTC-1) (A) **Ap 101**

Kromodihardjo, S. Optimization of Multipass Turning with Constraints (80-WA/Prod-22) (A) **My 83**

Krulis, G. E. Gas Turbine Vanadium Inhibition (81-GT-187) (A) **Jl 88**

Kubasco, A. J. Development of a Low-NO_x Lean Premixed Annular Combustor (81-GT-40) (A) **Je 106**

Kuehn, L. A. Assessment of Thermal Protection Afforded by Hot Water Diving Suits (80-WA/OCE-4) (A) **Mr 117**

Kuehnle, M. R. The Toroidal Drive **F 32**

Kuhlman, J. M. Reynolds Number and Ambient Turbulence Effects on the Nearfield Mean Characteristics of a Laboratory Model Thermal Plume (81-FE-7) (A) **S 81**

Kujawski, D. The Rate (Time)-Dependent Behavior of Ti-7Al-2Cb-1 Ta Titanium Alloy at Room Temperature Under Quasi-Static Monotonic and Cyclic Loading (81-APM-7) (A) **S 84**

Kulacki, F. A. Mixed Convection in Rectangular Channel Flow with Smooth Surfaces and One Heated Wall (81-HT-6) (A) **S 88**

Kulkarni, S. V. Synthesis of Four-Bar Linkage for Position, Velocity and Acceleration Coordination by Geometric Programming (80-DET-80) (A) **Mr 108**

Kumada, M. Studies of Full-Coverage Film Cooling Part 1: Cooling Effectiveness of Thermally Conductive Wall (81-GT-37) (A) **Je 107;** Part 2: Measurement of Local Heat Transfer Coefficient (81-GT-38) (A) **Je 106**

Kumar, A. The Dextrous Workspace (80-DET-108) (A) **Mr 110;** The Workspaces of a Mechanical Manipulator (80-DET-107) (A) **Mr 110**

Kumar, K. V. The Role of Wheel-Work Deflection in Grinding Operations (80-WA/Prod-11) (A) **My 82**

Kumar, R. A. Thermal Performance Analysis of an MHD Simulation Test Facility (80-WA/HT-13) (A) **Ap 104**

Kumar, S. Laboratory Investigation of Wheel Rail Contact Stresses for U.S. Freight Cars (80-WA/RT-8) (A) **F 126**

Kundig, A. A Fast Numerical Procedure to Solve the Meridional Equations of Motion in a Multistage Axial Flow Turbomachine (81-GT-133) (A) **Jl 85**

Kunkel, B. K. *(author)* Japanese Scientific and Technical Literature: A Subject Guide (CB) **N 115**

Kunyuan, P. Aerodynamic Design and Experimental Study of Marine Gas Turbine Exhaust Volutes (81-GT-143) (A) **Jl 84**

Kuo, P. S. On the Formulation of Coupled/Uncoupled Dynamics Analysis of Blade-Disc Assemblies (81-DET-126) (A) **D 91**

Kuofang, Q. New Correlations of the Two-Dimensional Turbine Cascade Aerodynamic Performance (81-GT-128) (A) **Jl 84**

Kurian, J. A Numerical Approach to the Stability of Rotor-Bearing Systems (81-DET-61) (A) **D 90**

Kusenberger, F. N. Inclusions and Service Induced Cracks in a Mature Population of Gas Turbine Engine Bearings (81-Lub-48) (A) **D 99**

Kuzay, T. M. Effective Thermal Conductivity of Porous Solid-Gas Mixtures (80-WA/HT-63) (A) **My 84**

Kwong, C. W. Design and Evaluation of Drag-Link Driven Cams (80-DET-38) (A) **F 121**

L

Laboratory Furnaces

Coal Ash Fouling Test in a Laboratory Furnace (81-JPGC-Fu-8) (A) **D 93**

Experimental Results in the Modeling and Control of a Small Furnace (80-WA/DSC-31) (A) **Mr 116**

Laboratory Investigation

On Investigation of the Mechanics and Noise Associated with Coal Cutting (80-WA/NC-1) (A) **F 123**

Laboratory Level

Handling Radioactivity: A Practical Approach for Scientists and Engineers (CB) **Ag 85**

Labowsky, M. Burning Rates of Linear Fuel Droplet Arrays (80-WA/HT-34) (A) **Ap 105**

Lacerenza, J. A. Editor, Retiring (C) **N 72**

Lacey, J. A. Sources of Noise Produced During Pneumatic Chipping Hammer Operation (80-WA/NC-11) (A) **F 124**

Lack-of-Penetration Defects

Significance of Centerline Lack-of-Penetration Defects in Double Seam-Welded SA-312 Pipe (81-PVP-33) (A) **Ag 81**

Ladders

Simple Engineering Homework Negates Alleged Defect in Ladder Accident Case (80-WA/DE-12) (A) **Ap 101**

Laga, H. J. Characterization of Dust and Emissions from a Taconite Bulk Handling Facility (80-WA/APC-2) (A) **Ap 102**

Lagrangian Mechanics

An Approach for Dynamic Analysis of Mechanical

Systems with Multiple Clearances Using Lagrangian Mechanics (81-DET-3) (A) **O 102**

Lahey, R. T., Jr. Elections to Fellow Grade **Mr 103**

Lai, J. S. Creep of 2618 Aluminum Under Side-Steps of Tension and Torsion and Stress Reversal Predicted by a Viscous-Viscoelastic Model (81-APM-8) (A) **S 84**

Lakes, R. Education Issues (C) **Ap 54**

Lakshminarayana, B. Interaction of Compressor Rotor Blade Wake with Wall Boundary Layer/Vortex in the End-Wall Region (81-Gr/GT-1) (A) **O 101**; Rotor Wake Mixing Effects Downstream of a Compressor Rotor (81-GT-98) (A) **Je 111**; Turbulence Characteristics in the Annulus-Wall Boundary Layer and Wake Mixing Region of a Compressor Rotor Exit (81-GT-148) (A) **Jl 85**

Lamb, J. P. Wellbore Flow Characteristics for Optimal Energy Recovery from Gulf Coast Geopressured Geothermal Sources (81-Pet-18) (A) **My 90**

Lambert, J. D. B. Operational Safety and Reliability Research at EBR-II (81-JPGC-NE-11) (A) **N 110**

Lambertz, J. The Influence of Blade Number Ratio and Blade Row Spacing on Axial-Flow Compressor Stator Blade Dynamic Load and Stage Sound Pressure Level (81-GT-165) (A) **Jl 87**

Laminar Flow

Melting with a Heated Plate Under Contact Pressure-Variable Property Solution (80-WA/HT-7) (A) **Ap 103**

Laminar Forced Convection

Analysis of Laminar Forced Convection Heat Transfer in the Entrance Region of a Flat Duct with Uniform Wall Temperature (81-HT-29) (A) **O 95**

Laminar Injection

The Influence of a Laminar Boundary Layer and Laminar Injection on Film Cooling Performance (81-HT-38) (A) **O 96**

Laminar Jets

Developing Region of Laminar Jets With Parabolic Exit Velocity Profiles (81-FE-3) (A) **Ag 82**

Laminar Mixing Layer

A Theoretical Study of Ignition in the Laminar Mixing Layer (81-HT-94) (A) **O 94**

Laminar Wavy-Film Flow

Laminar Wavy-Film Flow: Part 1—Hydrodynamic Analysis (81-HT-13) (A) **O 94**; Part II—Condensation and Evaporation (81-HT-14) (A) **S 89**

Laminated Central Disc

Parametric Design Analysis of a Hybrid Composite Flywheel Using a Laminated Central Disc and a Filament Wound Outer Ring (80-DET-97) (A) **Mr 110**

Laminated Composites

Fracture Criteria of Fibrous Laminated Composites Under In-Plane Multidirectional Loading (80-WA/APM-9) (A) **Ja 100**

Multiple Scattering of Waves in Irregularly Laminated Composites (80-WA/APM-22) (A) **Ja 102**

Laminates

The Finite Element Analysis of Mechanism Components Made From Fiber-Reinforced Composite Materials (80-DET-63) (A) **Mr 107**

Lamination Frequency

On-Line Hole Quality Evaluation for Drilling Composite Material Using Dynamic Data (80-WA/Prod-16) (A) **My 83**

Lamping, G. A. Stress Corrosion Cracking of Low Pressure Turbine Discs—An Industry Survey (81-JPGC-Pwr-30) (A) **D 92**

Lancaster, J. D. A CAD/CAM Graphics System with Relative Datums and Tolerances (81-DET-108) (A) **N 107**

Lancaster, J. K. Effects of Amplitude of Oscillation on the Wear of Dry Bearings Containing PTFE (81-Lub-6) (A) **D 96**

Lance, N. Jr. Regenerable CO_2 Collection for Spacecraft Application (81-ENAs-28) (A) **O 101**

Lanchester Damper

A Comparative Study of the Lanchester Damper and the Segmented Slug Damper in Boring Bar Applications (81-DET-90) (A) **O 105**

Land-Based Gas Turbines

Forging Simulations and Properties Achievable for Large Waspaloy Forgings for Land-Based Gas Turbines (81-GT-84) (A) **Je 110**

Land Speed Record

Quest for Land Speed Record (BTR) **My 44**

Landing Gear

Longitudinal Instability in Braked Landing Gear (80-WA/DSC-12) (A) **Mr 115**

Landis, J. N. Editor, Retiring (C) **N 72**

Landmarks

Blood Heat Exchanger Named Landmark **Ja 81**

Down by the Old Graue Mill (NR) **N 87**

The "Expanding Universe" (NR) **O 74**

First Reversible Pump-Turbine to Store Energy (NR) **N 87**

HAER's Landmark Contributions (C) **O 51**

Holt Caterpillar Tractor Designated International Landmark (NR) **Je 82**

Hydro-Power Plant and Shot Tower Named Landmarks (NB) **Ag 64**

Kaplan Turbine Named Landmark (NR) **Ap 74**

Throw Those Oars Away—Use an Evinrude Motor! (NR) **N 88**

Two Goliaths with a Brain Surgeon's Touch—French Steam Hammer and American Forging Press (NR) **D 75**

"World Without End;" A Journey in Sound (NR) **O 74**

Landsat Satellites

Monitoring the Gypsy Moth (BTR) **Ja 55**

Lane, A. D. Material, Design, and Test Aspects of Ceramic Component Development (81-GT-179) (A) **Jl 88**

Lane, D. F. Editor, Retiring (C) **N 73**

Lane, J. M. Cooled Radial In-Flow Turbines for Advanced Gas Turbine Engines (81-GT-213) (A) **Jl 90**

Lang, V. Wear and Operating Cost Reduction of Slurry Pumps by Means of Hydrodynamic Variable Speed Couplings (80-WA/MH-3) (A) **Ap 96**

Lange, C. H. Analytical Evaluation of Residual Stresses in Piping Subjected to Induction Heating Stress Improvement Process and Application to Operating Plants (81-PVP-19) (A) **Ag 80**

Langford, P. J. Analysis of Prestressed Double-Wall Tubing for LMFBR Steam Generators (81-PVP-25) (A) **Ag 81**

Lapalikar, S. R. Synthesis of Four-Bar Mechanism with Correlation Concept (80-DET-81) (A) **Mr 108**

Laplace Transform Inversion

Approximate Laplace Transform Inversion in Dynamic Viscoelasticity (80-WA/APM-29) (A) **Ja 102**

LaPlante, D. W. Conveyor Belt Scales and Gravimetric Weighfeeders—An Evolution (81-JPGC-Pwr-11) (A) **D 92**

Laramie River Station

Largest Consumer-Owned Power Plant (BTR) **F 57**

Large Buildings

The Calculation of a Fire in a Large Building (81-HT-2) (A) **S 88**

Large Naval Gears

Vibration Analysis of a Large Naval Gear (81-DET-142) (A) **D 91**

Large Particle Sizes

Heat and Mass Transfer from a Moist Porous Media of Large Particle Size (81-HT-53) (A) **O 97**

Large Pipes

Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (80-WA/PVP-6) (A) **Ja 98**

Large Scale Systems

A State Space Method for Kinematic Optimization of Mechanisms and Machines (80-DET-43) (A) **F 121**

Lark, R. F. Superhybrid Composite Blade Impact Studies (81-GT-24) (A) **Je 106**

Larkin, B. Pressure Drops and Heat Transfer in a Double Helix Heat Exchanger (80-WA/HT-38) (A) **Ap 106**

Larsen, J. D. Automated Storage/Retrieval Systems: A State-of-the-Art Update (80-WA/MH-4) (A) **Ap 96**

Larsen, P. S. Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) (A) **Ag 82**

Larson, J. W. Reliability Assessment of Advanced Coal-Fired Power Systems (81-JPGC-GT-1) (A) **D 94**

Larson, W. C. Drilling and Completing Multiple Branched Boreholes for In Situ Leach Mining (81-Pet-2) (A) **My 88**

LaRue, A. D. Reducing Auxiliary Fuel Consumption in Pulverized-Coal-Fired Boilers (80-WA/Fu-3) (A) **F 126**

Lasant

Solar Technologies Moving into 'Orbit' (NR) **O 68**

Laser Beams

In-Process Measurement of Surface Roughness in Turning by Laser Beams (80-WA/Prod-17) (A) **My 83**

Measuring Pollution by Laser (BTR) **Je 69**

Laser Fusion Research

'Compulsator' Developed at UT (EN) **Mr 82**

Laser Materials Processing

Center for Welding Research (EN) **O 86**

Laser Systems

Laser Detection (ES) **Je 25**

Laser Velocimeter

Supercavitating Cavity Observations by Means of Laser Velocimeter (80-WA/FE-5) (A) **My 85**

Lasers

'HEL' in Outer Space (BTR) **Jl 49**

Laser Chemistry (ES) **D 25**

Medical Applications of Lasers (BTR) **O 56**

Mirror-Polishing Technique for World's Largest CO_2 Lasers (BTR) **N 75**

Multiclient Laser Program (EN) **N 95**

Revolutionary Laser (BTR) **D 60**

'Soundprints' of Materials (BTR) **Ap 62**

Sun-Powered Laser (BTR) **Ap 59**

Latent Heat Transfer Rates

Latent and Sensible Heat Transfer Rates in the Boiling of Binary Mixtures (81-HT-28) (A) **O 95**

Lateral Mixing

The Effects of Bed Friction on Lateral Mixing in Open Channel Flow (81-FE-9) (A) **S 81**

Lateral Stability

Dynamic Response of Freight Vehicle Systems—A Performance Characterization (81-RT-4) (A) **Ag 76**

Lateral Vibration

Experimental Determination of Lateral Vibration of the 708 MVA Westinghouse Vertical Hydro Generators at Grand Coulee Dam, Washington (81-DET-70) (A) **N 106**

Lathes

Hex Bed Turret Converts Any Engine Lathe to a Turret Lathe (BTR) **F 55**

Laundering

An Analytical Approach to the Effect of Laundering Processes on the Drape and Stiffness Properties of Cotton Woven Fabrics (80-Tex-1) (A) **F 122**

Laura, P. A. A. Vibrations of Rectangular Plates With Nonuniform Elastic Edge Supports (80-WA/APM-28) (A) **Ja 102**

Laure, P. A. A. Evaluation of Eigenvalues in Regions of Complicated Boundary Shape in Problems Governed by Helmholtz Equation (81-DET-76) (A) **O 105**

Lavaflame System

Coke Oven Wall Repair (IF) **N 82**

Lavan, Z. Performance of Cross-Cooled Desiccant Dehumidifiers (80-WA/Sol-34) (A) **Ap 95**

Law, C. K. A Theoretical Study of Ignition in the Laminar Mixing Layer (81-HT-20) (A) **O 94**

Law, E. H. Railway Freight Car Field Tests (80-WA/DSC-7) (A) **Mr 115**

Law, H. K. A Theoretical Study of Ignition in the Laminar Mixing Layer (81-HT-20) (A) **O 94**

Layered Cylinders

On the Unbonded Contact Between Plates and Layered Cylinders (80-WA/APM-11) (A) **Ja 100**

Layered Half Space

Elastostatic Far-Field Behavior In a Layered Half Space Under Surface Pressure (80-WA/APM-7) (A) **Ja 100**

Layered Materials

New Materials Have Broad Range of Properties (BTR) **Je 64**

Layered Refractories

Coal Gasifier Lining (ES) **S 25**

Layton, R. P. Data Acquisition System for Thermal Stress Studies (80-WA/OCE-14) (A) **Ap 98**

Lazarick, R. T. Establishing Cruise-Engine Cycle Payoffs for a Supersonic VSTOL Aircraft (81-GT-100) (A) **Je 112**

Lea, J. F. Melting with a Heated Plate Under Contact Pressure-Variable Property Solution (80-WA/HT-7) (A) **Ap 103**

Leach Mining
Drilling and Completing Multiple Branched Boreholes for In Situ Leach Mining (81-Pet-2) (A) **My 88**
Lead-Acid Batteries
Science Expo '81 (NB) **Je 90**
Solar-Powered Radio Station (C) **Mr 67**
Lead Acid Battery Complex
Batteries for Peak Loads (ES) **Ja 21**
Lead Shot
Hydro-Power Plant and Shot Tower Named Landmarks (NB) **Ag 64**
Leakage
Evaluation of a Proposed Modification of the F-Chart Method to Include Collector Array Air Leakage (80-WA/Sol-12) (A) **Ap 93**
Rotor-Tip Leakage: Part I—Basic Methodology (81-GT-71) (A) **Je 110**; Part II—Design Optimization Through Viscous Analysis and Experiment (81-GT-72) (A) **Je 110**
Lean Premixed Combustor
Development of a Low-No_x Lean Premixed Annular Combustor (81-GT-40) (A) **Je 106**
Leasing
Equipment Leasing Terms for Solar Heaters (IF) **S 58**
Leban, M. I. Water Recovery by Catalytic Treatment of Urine Vapor (80-ENAs-16) (A) **Mr 112**
Lebeck, A. O. Experimental Evaluation of a Mixed Friction Hydrostatic Mechanical Face Seal Model Considering Radial Taper, Thermal Taper, and Wear (81-Lub-38) (A) **D 98**
Leber, R. E. Overview of Unconventional Energy Projects in the Public Power Sector (81-DGP-1) (A) **My 87**
Leboeuf, F. Study of Secondary Flows in Blade Cascades of Turbomachines (81-Gr/GT-4) (A) **O 102**
LeCren, R. T. Low-NO_x Combustion Systems for Burning Heavy Residual Fuels and High-Fuel-Bound Nitrogen Fuels (81-GT-109) (A) **Je 113**
Lecturers
Fulbright Lecturers for USSR (EN) **Ap 82**
Fulbright Scholars for Short-Term Visits (EN) **D 79**
Lee, D. E. Analytical Model of the Round Buoyant Jet (81-FE-10) (A) **S 81**
Lee, E. I. Numerical Study of Heat Transfer in Rectangular Air Enclosures of Aspect Ratio Less Than One (80-WA/HT-43) (A) **Ap 106**
Lee, J. K. Rotating Blade Vibration Analysis Using Shells (81-GT-80) (A) **Je 110**; Vibrations of Twisted Rotating Blades (81-DET-127) (A) **N 108**
Lee, L. S. S. Stability Analysis of Rotor Lifting Arrangement (80-WA/DE-10) (A) **Ap 98**
Lee, M. Optimal Design of Linear and Nonlinear Vibration Absorbers for Damped Systems (81-DET-83) (A) **N 105**
Lee, P. F. Analysis of Heat and Mass Transfer Within a Sheet of Papermaking Fibers During Drying (81-HT-49) (A) **O 97**
Lee, S. L. LDA Measurement of Droplet Behavior Across Tie Plate During Dispersed Flow Portion of LOCA Reflood (80-WA/NE-4) (A) **Ja 96**
Lee, S. S. Elections to Fellow Grade **D 87**
Lee, T. W. Kinematic Synthesis of Planar Two-Gear Drives With Prescribed Dwell Characteristics (81-DET-2) (A) **O 103**; Optimization of High Speed Geneva Mechanisms (80-DET-56) (A) **Mr 107**
Leech, W. J. Heat Transfer Augmentation in Rod Bundles Near Grid Spacers (80-WA/HT-62) (A) **My 84**
LeGette, J. A. Design and Erection of Cold Spring Piping for Power Piping Systems (81-PVP-5) (A) **Ag 79**
Leggs' Hosiery Plant
Feasibility Study for the Use of Geothermal Energy at a Leggs' Hosiery Plant (81-Pet-8) (A) **My 89**
Legionellosis
Legionnaires' Disease: Air-Conditioning Systems But One Source of Infection (BTR) **Je 69**
Legislative System
The End of DOE? (WW) **D 84**
Lehman, C. L. Engine Cycle Selection for Advanced Technology Engine Studies (81-GT-191) (A) **Jl 89**
Lehmann, G. Arrays of Impinging Jets With Spent Fluid Removal Through Vent Holes on the Target Surface, Part 2: Local Heat Transfer (81-HT-76) (A) **O 99**
Lehr, W. J. Fate and Threat of Oil Slicks in the Arabian Gulf (80-ENAs-10) (A) **Mr 111**
Leibowitz, L. P. High Temperature Solar Thermal Technology (80-WA/Sol-94) (A) **Ap 94**
Lais, B. N. Fatigue and Fracture Analysis of Two Turbine Shafts (81-PVP-27) (A) **Ag 81**
Leissa, A. W. Rotating Blade Vibration Analysis Using Shells (81-GT-80) (A) **Je 110**; Vibrations of Rectangular Plates With Nonuniform Elastic Edge Supports (80-WA/APM-28) (A) **Ja 102**; Vibrations of Twisted Rotating Blades (81-DET-127) (A) **N 108**
LeMay, R. C. Observations from Ten Years of Industrial Plant Energy Surveys (81-PID-4) (A) **My 86**
Lenox, T. G. Digital Control Makes a Commercial Debut on the JT9D Engine (81-GT-199) (A) **Jl 89**
Lenz, E. Signature Analysis Applied to Drilling (81-DET-9) (A) **D 88**
Lepor, M. Noise Suppressors for Jet Engine Testing (80-ENAs-28) (A) **Mr 112**
Lescoe, J. D. Pulsation of High Pressure Turbine (80-JPGC/Pwr-14) (A) **F 117**
LeTourneau, J. J. Pattern Factor Improvement in the F-100 Primary Combustion System (81-GT-25) (A) **Je 105**
Leverant, G. R. Stress Corrosion Cracking of Low Pressure Turbine Discs—An Industry Survey (81-JPGC-Pwr-30) (A) **D 92**
Levin, R. L. The Effect of Solute Polarization on the Freezing and Thawing of Aqueous Solutions (80-WA/HT-21) (A) **Ap 104**
Levine, S. *(author)* Human Resources in Japanese Industrial Development (CB) **My 93**
Lew, H. G. Effects of Vitiation on Axial Catalyst Bed Temperature Profiles (81-GT-141) (A) **Jl 84**
Lewis, B. L. Effect of Time-Dependent Flight Loads on Turbofan Engine Performance Deterioration (81-GT-203) (A) **Jl 90**
Lewis, D. W. Elections to Fellow Grade **Ja 95**
Lewis, G. D. Prediction of NO_x Emissions (81-GT-119) (A) **Je 114**
Lewis, O. L. Editor, Retiring (C) **N 72**
Lewis, S. Treatment of CELSS and PCELSS Waste to Produce Nutrients for Plant Growth (81-ENAs-19) (A) **O 100**
Lewis Form Factor
The Determination of the Lewis Form Factor and the AGMA Geometry Factor J for External Spur Gear Teeth (80-DET-59) (A) **Mr 106**
LEXAN Sheet
"How-To" of Whetstone Longevity (BTR) **Mr 73**
L.-Fernandez, M. Tow Techniques for Marine Pipeline Installation (81-Pet-30) (A) **My 90**
Li, C. On the Unbonded Contact Between Plates and Layered Cylinders (80-WA/APM-11) (A) **Ja 100**
Li, C.-H. Dynamics of Rotor Bearing Systems Supported by Floating Ring Bearings (81-Lub-37) (A) **D 98**
Li, D. F. Component Mode Synthesis of Large Rotor Systems (81-GT-147) (A) **Jl 85**; A Study of the Modal Truncation Error in the Component Mode Analysis of a Dual-Rotor System (81-GT-144) (A) **Jl 84**; Unbalance Response of a Two-Spool Gas Turbine Engine with Squeeze Film Bearings (81-GT-219) (A) **Jl 90**
Li, S. Visualization of the Flow Structure at the Free Interface of Two Counter-Flowing Streams (80-WA/FE-11) (A) **My 86**
Li, Y. S. A Thermal Analysis on the Deep Quest Life Support System (80-ENAs-30) (A) **Mr 113**
Liberal Arts Students
History and Engineering (EN) **O 86**
Librations
Dynamics of a Deploying Orbiting Beam-Type Appendage Undergoing Librations (81-DET-63) (A) **N 106**
Li-Cha, Z. The Quantitative Analysis of Three-Dimensional Displacement Fields by Single Laser Hologram (81-GT-215) (A) **Jl 91**
Lichtenberg, G. Vibrations of an Elastically Mounted Spinning Rotor Partially Filled with Liquid (81-DET-54) (A) **D 89**
Lichti, G. W. Analysis of the Double-Link Reverser (80-DET-2) (A) **F 118**
Liebich, R. E. Industrial Noise Pollution—Part 1: The Nature and Extent of the Problem **Jl 34**
Liechty, R. Considerations on the Use of Radially Steered Wheelsets in Railway Trucks (80-WA/RT-10) (A) **F 126**
Lienhard, J. H. Corresponding States Correlation for the Spinodal and Homogeneous Nucleation Pressures (81-HT-19) (A) **O 94**
Life Sciences
Life Sciences Experiments on Spacelab 1 **Je 50**
Life Sciences Experiments
The Development of a Space Shuttle Research Animal Holding Facility (80-ENAs-39) (A) **Mr 113**
Experiment Operations in Spacelab (80-ENAs-40) (A) **Mr 113**
Life Sciences Experiments for Dedicated Spacelab Missions (80-ENAs-37) (A) **Mr 113**
Life Sciences Experiments on Spacelab 1 (80-ENAs-36) (A) **Mr 113**
NASA-AMES Life Sciences Flight Experiments Program—1980 Status Report (80-ENAs-34) (A) **Mr 113**
Life Support Systems
An Approach to the Preliminary Evaluation of Closed-Ecology Life Support System (CELSS) Scenarios and Control Strategies (81-ENAs-38) (A) **O 101**
Generic Waste Management Requirements for a Controlled Ecological Life Support System (81-ENAs-23) (A) **O 100**
A History of the Naval Research Laboratory Contributions to Submarine Life Support Systems (80-ENAs-29) (A) **Mr 112**
A Thermal Analysis on the Deep Quest Life Support System (80-ENAs-30) (A) **Mr 113**
Lifetime Criteria
FETF Core Component Duct Lifetime: Criteria and Core Management Methods (81-PVP-23) (A) **Ag 80**
Lift Cables
At-Sea Evaluation of a Ram Tensioner for Ocean Deployment and Recovery (80-WA/OCE-5) (A) **Ap 97**
Lifting Beams
Stability Analysis of Rotor Lifting Arrangement (80-WA/DE-10) (A) **Ap 98**
Lifting Line Theory
Application of Lifting Line Theory to Streamsurface Theory in Subsonic Flow (81-GT-166) (A) **Jl 86**
Lifts
The Crane Truth (C) **My 42**
Light-Electric Bulb
Solar Cell Housed in Light-Bulb Enclosure (BTR) **S 55**
Light Intensity
Speed Control for Universal Motors (81-DE-1) (A) **Ag 77**
Light Wall Copper-Nickel
Attributes of Light Wall Copper-Nickel Condenser Tubing (81-JPGC-Pwr-10) (A) **N 111**
Lighting Levels
Realistic Lighting Levels (BTR) **S 53**
Lighting Systems
Awards Program Recognizes Novel Lighting Systems (NR) **Ap 77**
Lightner, S. The Venting Characteristics of a Fibrous Thermal Barrier System During a Rapid Depressurization Accident (Rotor Failure) in an HTGR-GT (81-GT-14) (A) **Je 105**
Lightning Arrestors
Picture Worth 500 Words (C) **S 48**
Lightside Atmospheric Revitalization System
Lightside Atmospheric Revitalization System for Space Shuttle Orbiter (81-ENAs-26) (A) **S 87**
Lightweight Cars
Getting 95 Miles per Gallon With New Transmission (EN) **Ag 66**
Lightweight Equipment
Design Challenges of High Performance Aircraft POD EOCM Cooling Systems (81-ENAs-6) (A) **O 100**
Lightweight Fibrous Insulations
Radiative Heat Transfer in Fibrous Insulations—Part 1: Analytical Study (81-HT-42) (A) **O 96**; Part II: Experimental Study (81-HT-43) (A) **O 97**
Lignin
Let's Save Our Soil (C) **My 43**
Lignite-Fired Boilers
The Use of Additives to Reduce Ash Fouling Problems in Lignite-Fired Boilers (80-JPGC/Fu-3) (A) **Ja 99**
Lignon, D. M. The Role of Advanced Converters (80-WA/NE-6) (A) **Ja 98**

Lilley, D. G. Computer Prediction of Local Destratification Near Low-Level Release Structures of Reservoirs (81-FE-11) (A) **S 81**

Limiting Shear Stress
Some Observations in High Pressure Rheology of Lubricants (81-Lub-17) (A) **D 96**

Lin, B. Z. Similarity Law of Transonic Flow Fields Around Cascades (81-GT-36) (A) **Je 107**

Lin, C. J. Coal Ash Fouling Test in a Laboratory Furnace (81-JPGC-Fu-8) (A) **D 93**

Lin, C. S. Optimum Path Planning for Mechanical Manipulators (80-WA/DSC-18) (A) **Mr 115**

Lin, J. C. Results and Predictions of Scaled, Nuclear Large Break Loss-of-Coolant Experiments (80-WA/HT-49) (A) **Ap 106**

Lin, Y. K. Effects of Wall Conduction on Heat Transfer for Turbulent Flow in a Circular Tube (81-HT-30) (A) **O 95**

Lindberg, L. J. Material, Design, and Test Aspects of Ceramic Component Development (81-GT-179) (A) **Jl 88**

Lindinger, R. J. Corrosion Experiences in Large Steam Turbines (81-JPGC-Pwr-32) (A) **N 113**

Line-Envelopes
Equations for Four-Bar Line-Envelopes (80-DET-40) (A) **F 121**

Line Installation
Transmission Line Research (ES) **Je 24**

Line Plumes
The Effect of Froude Number on Entrainment in Two-Dimensional Line Plumes (81-FE-6) (A) **Ag 83**

Line Trajectories
The Curvature Theory of Line Trajectories in Spatial Kinematics (80-DET-18) (A) **F 119**

Linear Anisotropic Scattering
Radiative Heat Transfer in Fibrous Insulations—Part I: Analytical Study (81-HT-42) (A) **O 96**; Part II: Experimental Study (81-HT-43) (A) **O 97**

Linear Cutting Apparatus
An Investigation of the Mechanics and Noise Associated with Coal Cutting (80-WA/NC-1) (A) **F 123**

Linear Duct Acoustics
Numerical Techniques in Linear Duct Acoustics—A Status Report (80-WA/NC-2) (A) **F 124**

Linear Elasticity
Vibrations of Solid Cylinders (80-WA/APM-20) (A) **Ja 101**

Linear Estimator
Linear Optimal Estimation of Discrete Bilinear Systems (80-WA/DSC-14) (A) **Mr 115**

Linear Fuel Droplet Arrays
Burning Rates of Linear Fuel Droplet Arrays (80-WA/HT-34) (A) **Ap 105**

Linear Impact Tool
A Linear Impact Tool for Diver Use (81-DE-11) (A) **Ag 78**

Linear-Nonlinear Interface
Linear-Nonlinear Interface for Finite Element Impact Analysis (81-GT-39) (A) **Je 106**

Linear Partition
Optimum Synthesis of Multi-Loop Planar Mechanisms Via the Linear Partition of Design Equations (Method of No Misconceptions) (80-DET-1) (A) **F 118**

Linear Prediction Theory
Linear Prediction Theory for Digital Simulation of Sea Waves (81-Pet-7) (A) **My 80**

Linear Programming
Optimization of Multipass Turning with Constraints (80-WA/Prod-22) (A) **My 83**

Linear Seals
Particulate Ingression Past Elastomeric Linear Motion Seals (81-DE-10) (A) **Ag 78**

Linear Spectral Analysis
Assessment of Linear Spectral Analysis Method for Offshore Structures Via Random Sea Simulation (81-Pet-9) (A) **My 80**

Linear Springs
The Simultaneous Analytical Synthesis of Mass and Spring Elements in Planar Mechanisms (80-DET-50) (A) **Mr 108**

Linear Systems
Some Results on the Nature of Eigenvalues of Discrete Damped Linear Systems (80-WA/APM-19) (A) **Ja 101**

Linear Windowing
Use of Cepstra in Acoustical Signal Analysis (81-DET-138) (A) **D 92**

Lineberger, J. H. Results and Predictions of Scaled, Nuclear Large Break Loss-of-Coolant Experiments (80-WA/HT-49) (A) **Ap 106**

Linepipe
Specifying Linepipe Suitable for Safe Operation in Sour Wet Service (81-Pet-1) (A) **My 88**

Linings
Coal Gasifier Lining (ES) **S 25**
Rubber Lined Pipelines—An Overview (80-WA/MH-8) (A) **Ap 96**

Link Mechanisms
Complete Shaking Force and Shaking Moment Balancing of Link Mechanisms Using Balancing Idler Loops (80-DET-100) (A) **Mr 109**

Linkage
Analysis and Synthesis of a Three-Link Linkage with an Intermediate Higher Kinematic Pair (80-DET-94) (A) **Mr 109**
On Attempting to Reduce Undesirable Inertial Characteristics of the Schatz Mechanism (80-DET-79) (A) **Mr 108**
The Finite Element Design of Linkages—A Comparison of Timoshenko and Euler Bernoulli Elements (81-DET-109) (A) **N 107**
An Interactive Computer Program for Force System Structural and Dimensional Synthesis (80-DET-61) (A) **Mr 107**
Kinematic Synthesis of an Adjustable Six-Bar Angular-Motion Compensator (80-DET-10) (A) **F 118**
Linkage Characteristic Polynomials: Assembly Theorems, Uniqueness (80-DET-9) (A) **F 118**
Linkage Characteristic Polynomials: Definitions, Coefficients by Inspection (80-DET-8) (A) **Mr 106**
On Linkages and Mobile Polyhedra (80-DET-30) (A) **F 120**
3 MSP Synthesis of the RCCC Linkage: A Generalized Dual Number Approach (80-DET-99) (A) **Mr 109**
On Predicting Vibrations in Realistically Proportioned Linkage Mechanisms (80-DET-4) (A) **F 118**
Stability of Motion of Elastic Planar Linkages With Application to Slider Crank Mechanism (81-DET-6) (A) **N 104**

Linkage Dimensions
Computer-Aided Design of Precision Control Linkages in the Classroom (80-WA/DSC-39) (A) **Mr 117**

Linkage Mechanisms
The Finite Element Analysis of Flexible Components of Mechanical Systems Using a Mixed Variational Principle (80-DET-64) (A) **Mr 107**

Linkage Operators
Type and Dimensional Synthesis of Casement Window Mechanisms **D 46**

Linkage Synthesis Program
Implementation of Solution Rectification Techniques in an Interactive Linkage Synthesis Program (80-DET-91) (A) **Mr 109**

Linkages
Computer Aided Linkage Design Using the LINCAGES Package (81-DET-121) (A) **D 92**

Lips, K. W. Dynamics of a Deploying Orbiting Beam-Type Appendage Undergoing Librations (81-DET-63) (A) **N 106**

Liquefaction
Coal Liquefaction (IF) **Ap 67**

Liquefied Butane
Combustion of Methanol and Liquefied Butane in a Gas Turbine Combustor (81-GT-50) (A) **Je 108**

Liquefied Methane
Liquefied-Methane-Powered Airplane (BTR) **D 58**

Liquefied Natural Gas
The Challenge of LNG in the 1980s **Mr 46**

Liquefiers
Can Magnetic Refrigerators Liquefy Hydrogen at High Efficiency? (81-HT-82) (A) **O 99**

Liquid Carbon Dioxide
Co_2 Instead of Water (ES) **O 26**

Liquid Crystals
Evaluation of a Method for Heat Transfer Measurements and Thermal Visualization Using a Composite of a Heater Element and Liquid Crystals (81-GT-93) (A) **Je 112**

Liquid Cycles
Dual Pressure Steam/Immiscible Liquid Cycles for Gas Turbine Exhaust Heat Recovery (81-GT-55) (A) **Je 108**

Liquid Droplets
Droplet Dynamics in Creeping Flows (81-APM-29) (A) **S 85**
Effect of Pressure on Bubble Growth Within Liquid Droplets Heated to Their Limits of Superheat (81-HT-11) (A) **O 94**

Liquid Flow
Liquid Custody Transfer Measurement Can Be Accurate (81-Pet-26) (A) **My 90**

Liquid Fuels
Coal Pyrolysis (ES) **S 25**
Engine Fuels from Biomass (81-DGP-4) (A) **My 87**
Versatile Synthetic Methanol (C) **Mr 64**

Liquid Helium
Small Helium Liquefier (IF) **D 64**

Liquid Hydrocarbon Fuels
Fuels from Biomass (ES) **F 23**

Liquid Hydrogen
Fuel for Future Transport Aircraft (81-HT-80) (A) **O 99**
Liquid Hydrogen for Automotive Vehicles—Experimental Results (81-HT-83) (A) **O 99**
Liquid Hydrogen as a Vehicular Fuel: An Evaluation **My 24**

Liquid Natural Gas Carrier
An LNG Carrier Adjustable Speed Gas Turbine Electric Propulsion System (81-GT-112) (A) **Je 113**

Liquid Natural Gas Tank
Infrared Thermography (BTR) **F 54**

Liquid Pipelines
Contingency Planning for Liquid Pipeline Spills (81-Pet-12) (A) **My 89**

Liquid Sprays
Drop-Size Distributions of Newtonian and Bingham Liquid Sprays Produced by Fan-Jet Pressure Nozzles With and Without the Preorifice (81-PID-3) (A) **My 86**

List, J. Transition From a Turbulent Jet into a Turbulent Plume (81-FE-29) (A) **S 82**

Little, B. H., Jr. The Role of Flight Research Vehicles in Prop-Fan Technology Development (81-GT-216) (A) **Jl 91**

Litvin, F. L. Analysis and Synthesis of a Three-Link Linkage with an Intermediate Higher Kinematic Pair (80-DET-94) (A) **Mr 109**

Liu, B. Y. H. Elections to Fellow Grade **N 103**

Liu, C. K. A Thermal Analysis on the Deep Quest Life Support System (80-ENAs-30) (A) **Mr 113**

Liu, F. C. At-Sea Evaluation of a Ram Tensioner for Ocean Deployment and Recovery (80-WA/OCE-5) (A) **Ap 97**

Livingston, W. L. The Process Computer: Frankenstein or Genie? **N 60**

LNG Cogeneration Plant
LNG Cogeneration Power Station (80-JPGC/Pwr-11) (A) **F 117**

Lo, E. Y. Scale Effects in the Dynamic Transfer Functions for Cavitating Inducers (80-WA/HT-51) (A) **Ap 107**

Load Capacity
Analysis of Externally Pressurized, Double-Pad, Gas Porous Thrust Bearing (81-Lub-25) (A) **D 98**
Development of Foil Journal Bearings for High Load Capacity and High Speed Whirl Stability (81-Lub-36) (A) **D 98**

Load Carrying Capacity
Ball-Ball Load Carrying Capacity in Retainerless Angular-Contact Bearings (81-Lub-47) (A) **D 99**

Load Cells
A Closer Look at Gravimetric Feeder Design Using Load Cells (80-JPGC/Pwr-13) (A) **F 117**

Load Conditions
The Development of An Optimum Wheel Profile for Self-Steering Trucks Under Heavy Axle Load Conditions (80-WA/RT-5) (A) **F 125**

Load Control Unit
Maximum Demand Controller (IF) **Ja 66**

Load Distributions
A Practical Approach to Systems Mode Analysis (81-DET-130) (A) **N 108**

Load Feedback
Diesel Engine Governing with Load Feedback (81-DGP-5) (A) **My 88**

Loading Conditions
A Technique for Kinematic Modelling of Anatomical Joints (80-DET-84) (A) **Mr 109**

Loads
Load-Sensing Device (BTR) **My 49**
Upper Bound Analysis of Axisymmetric, Closed-Die Forgings (80-WA/Prod-1) (A) **My 84**
Loblitz, D. W. VAWTDYN—A Numerical Package for the Dynamic Analysis of Vertical Axis Wind Turbines (80-WA/Sol-18) (A) **Ap 94**
LOCA Reflood
LDA Measurement of Droplet Behavior Across Tie Plate During Dispersed Flow Portion of LOCA Reflood (80-WA/NE-4) (A) **Ja 96**
Local Destratifications
Computer Prediction of Local Destratification Near Low-Level Release Structures of Reservoirs (81-FE-11) (A) **S 81**
Local Heat Transfer
Studies of Full-Coverage Film Cooling Part 1: Cooling Effectiveness of Thermally Conductive Wall (81-GT-37) (A) **Je 107**; Part 2: Measurement of Local Heat Transfer Coefficient (81-GT-38) (A) **Je 108**
Locks
Lock for Hydraulic Actuators (BTR) **Jl 49**
Locomotive Reliability
Mechanically Bonded Radiators for Locomotive Reliability (80-WA/RT-4) (A) **F 125**
Locomotive Technology
Joint ASME/IEEE Rail Conference, preview (NR) **Mr 80**
Locomotive Wheels
Wear Prediction for Locomotive Wheels (81-RT-6) (A) **Ag 76**
Locomotives
Evaluation Techniques for Locomotive Performance (Fuel Economy, Adhesion, Tractive Effort) (81-RT-1) (A) **Ag 76**
Fatigue Damage of the Locomotive Suspension Elements Under Random Loading (80-WA/DE-7) (A) **Ap 98**
Progress in Railway Mechanical Engineering (1979 – 1980 Report of Survey Committee)—Locomotives (80-WA/RT-12) (A) **F 126**
Railroads—Is There Light at the End of the Tunnel? (NR) **Jl 85**
The SD50 Locomotive (81-RT-2) (A) **Ag 77**
Loewenthal, S. H. Design of Spur Gears for Improved Efficiency (81-DE-4) (A) **AG 78**; Effects of Ultra-Clean and Centrifugal Filtration on Rolling-Element Bearing Life (81-Lub-35) (A) **D 97**; Kinematic Correction for Roller Skewing (80-DET-76) (A) **Mr 108**
Lof, G. O. G. Performance of Solar Collectors—An Evaluation of Standard Ratings (80-WA/Sol-1) (A) **Ap 92**
Logan, E. Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (80-WA/FE-9) (A) **My 86**
Logical Functions
A Logical Function Method for Dynamic and Design Sensitivity Analysis of Mechanical Systems with Intermittent Motion (80-DET-39) (A) **F 121**
Loh, H. T. On Circular Pipe Wall Vibratory Response Excited by Internal Acoustic Fields (80-WA/NC-13) (A) **F 124**
Long-Life Fatigue
Long-Life Fatigue of Type 316 Stainless Steel of Temperatures Up to 593°C (81-Mat-2) (A) **O 102**
Longcope, D. B. A Model to Estimate Forces on Conical Penetrators Into Dry Porous Rock (81-APM-15) (A) **S 84**
Longitudinal Instability
Longitudinal Instability in Braked Landing Gear (80-WA/DSC-12) (A) **Mr 115**
Lönnroth, M. *(author)* Energy in Transition: A Report on Energy Policy and Future Options (CB) **F 128**
Loop and Pool Reactor
LMFBR Designs for the Twenty-First Century (81-PVP-29) (A) **Ag 81**
Lord, P. R. The Tearing of Plain Woven Fabrics Made from Ring, Open and Twistless and Twisted Bonded Yarns (80-Tex-4) (A) **F 122**
Los Alamos
Reminiscences of Los Alamos, 1943 – 1945 (Studies in the History of Modern Science 5) (CB) **Jl 93**
Loser, H. Objectives of and Approach to Spacelab Thermal System Test Performed with the Engineering Model (81-ENAs-17) (A) **S 87**; Spacelab Thermal System Analysis Approach and First Results of System Verification Testing (80-ENAs-21) (A) **Mr 112**
Loss-of-Coolant Accident
Experimental Determination of Lower Plenum ECC Injection Effectiveness (80-WA/HT-60) (A) **My 84**
An Investigation of Small Break Loss-of-Coolant Phenomena in a Small Scale Nonnuclear Test Facility (80-WA/NE-2) (A) **Ja 96**
U-Tube PWR Steam Generator Heat Transfer During a Large Loss of Coolant Accident Transient (80-WA/HT-61) (A) **My 84**
Loss-of-Coolant Experiments
Results and Predictions of Scaled, Nuclear Large Break Loss-of-Coolant Experiments (80-WA/HT-49) (A) **Ap 106**
Loth, J. L. Controlled Combustion of a Varying Low-Btu Coal-Derived Gas (81-GT-134) (A) **Jl 85**
Loth, R. A. Technology Assessment: A Background Review (80-WA/Mgt-3) (A) **Ja 102**
Louis, J. F. Critical Heat Flux in the Channels of a Closed-Loop Water-Cooled Turbine (81-HT-74) (A) **O 98**
Louvered Surfaces
Parametric Analysis of Louvered Air-Heating Solar Collectors (80-WA/Sol-38) (A) **Ap 95**
Love, W. J. Ductile Axial Crack Extension in Pipes (80-WA/PVP-5) (A) **Ja 98**; Dynamic Crack Propagation in Very Ductile Materials—The Influence of Inertia (80-WA/PVP-8) (A) **Ja 98**; Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (80-WA/PVP-6) (A) **Ja 98**
Low, G. M. Productivity, Professionalism, and the Public Interest **Je 58**
Low-Caloric Gas
Materials Exposure Test Facilities for Varying Low-Btu Coal-Derived Gas (81-GT-170) (A) **Jl 87**
Low-Cycle Fatigue
Evaluation of Methods for the Treatment of Mean Stress Effects on Low-Cycle Fatigue (81-GT-122) (A) **Je 114**
Low-Cycle Fatigue Tests
Cyclic Behavior of Class U Wheel Steel (80-WA/RT-9) (A) **F 126**
Low-Level Cooling Towers
Unique Cooling Tower (IF) **D 64**
Low-Level Release Structures
Computer Prediction of Local Destratification Near Low-Level Release Structures of Reservoirs (81-FE-11) (A) **S 81**
Low Speed Crossflow
Analysis for Predicting Adiabatic Wall Temperatures with Single Hole Coolant Injection into a Low Speed Crossflow (81-GT-91) (A) **Je 111**
Low Speed Turbines
Use of a Tracer Gas Technique to Study Mixing in a Low Speed Turbine (81-GT-86) (A) **Je 111**
Low-Sulfur Coal
Blended Coal (ES) **Ja 21**
Low Temperature Ratio
An Experimental Investigation of a Low Temperature Ratio Stirling Engine (81-DGP-11) (A) **My 88**
Lowen, G. G. A New Concept for Force Balancing Machines for Planar Linkages: Part I: Theory (80-DET-73) (A) **Mr 108**; Part II: Application to Fc_r-Bar Linkage and Experiment (80-DET-74) (A) **Mr 108**
Lower Plenum
Experimental Determination of Lower Plenum ECC Injection Effectiveness (80-WA/HT-60) (A) **My 84**
Lu, L. K. Vibration Analysis of a Large Naval Gear (81-DET-142) (A) **D 91**
Lu, S. Y. Vibrations of Cylindrical Shells With Time-Dependent Boundary Conditions (81-PVP-21) (A) **Ag 80**
Lubricant Starvation
Analysis of Starvation Effects on Hydrodynamic Lubrication in Nonconforming Contacts (81-Lub-52) (A) **D 100**
Lubricants
A Comparison of Tilting Pad Thrust Bearing Lubricant Supply Methods (81-Lub-8) (A) **D 96**
Evaluation of Polymers as Lubricants in the Extrusion of Aluminum (81-Lub-21) (A) **D 97**
Some Observations in High Pressure Rheology of Lubricants (81-Lub-17) (A) **D 96**
Lubrication
Joint ASLE/ASME Lubrication Conference, review (NR) **D 72**
Large-Scale Application of Pure Oil Mist Lubrication **My 30**
Lubrication Conference—Southern Style, preview (NR) **S 88**
Lubrication Fundamentals (CB) **O 106**; **N 116**
Lubrication Technology
Analysis of Externally Pressurized, Double-Pad, Gas Porous Thrust Bearing (81-Lub-25) (A) **D 98**
Analysis of Face Seals with Shrouded Pockets (81-Lub-49) (A) **D 99**
Analysis of Starvation Effects on Hydrodynamic Lubrication in Nonconforming Contacts (81-Lub-52) (A) **D 100**
Analytical and Experimental Investigation of Magnetic Support Systems. Part I: Analysis (81-Lub-31) (A) **D 98**; Part II: Experimental Investigation (81-Lub-32) (A) **D 98**
Ball-Ball Load Carrying Capacity in Retainerless Angular-Contact Bearings (81-Lub-47) (A) **D 99**
A Comparison of Tilting Pad Thrust Bearing Lubricant Supply Methods (81-Lub-8) (A) **D 96**
Design and Testing of a New Double Labyrinth Seal (81-Lub-58) (A) **D 99**
Development of Foil Journal Bearings for High Load Capacity and High Speed Whirl Stability (81-Lub-36) (A) **D 98**
Dynamic Analysis of Noncontacting Face Seals (81-Lub-10) (A) **D 96**
Dynamic Analysis of Rocking Journal Bearings with Multiple Offset Segments (81-Lub-34) (A) **D 98**
Dynamic Analysis of Rupture in Thin Fluid Films. 1—A Noninertial Theory (81-Lub-24) (A) **D 98**
Dynamics of Rotor Bearing Systems Supported by Floating Ring Bearings (81-Lub-37) (A) **D 98**
Effect of Grain Flow Orientation on Rolling Contact Fatigue Life of AISI M-50 (81-Lub-57) (A) **D 100**
Effect of Surface Ellipticity on Dynamically Loaded Cylindrical Bearings (81-Lub-1) (A) **D 96**
Effect of Surface Roughness on Elastohydrodynamic Line Contact (81-Lub-23) (A) **D 98**
Effects of Amplitude of Oscillation on the Wear of Dry Bearings Containing PTFE (81-Lub-6) (A) **D 96**
The Effects of Artificially-Produced Defects on the Film Thickness Distribution in Sliding EHD Point Contacts (81-Lub-46) (A) **D 98**
The Effects of Friction Between Cylinders and Rubber Staves of Finite Thickness (81-Lub-30) (A) **D 98**
Effects of Ultra-Clean and Centrifugal Filtration on Rolling-Element Bearing Life (81-Lub-35) (A) **D 97**
Empirical Design Procedure for the Thermohydrodynamic Behavior of Journal Bearings (81-Lub-19) (A) **D 97**
Endurance Tests with Large-Bore Tapered-Roller Bearings to 2.2 Million DN (81-Lub-56) (A) **D 100**
Evaluation of Polymers as Lubricants in the Extrusion of Aluminum (81-Lub-21) (A) **D 97**
Evaluation of Sealing Systems for Nonflammable Aircraft Hydraulic Fluids (81-Lub-51) (A) **D 99**
Experimental Evaluation of a Mixed Friction Hydrostatic Mechanical Face Seal Model Considering Radial Taper, Thermal Taper, and Wear (81-Lub-38) (A) **D 98**
Experimental Investigation of the Effect of System Rigidity on Wear and Friction-Induced Vibrations (81-Lub-3) (A) **D 95**
An Experimental Investigation of Molecular Rarefaction Effects in Gas Lubricated Bearings at Ultra-Low Clearances (81-Lub-44) (A) **D 99**
Film Formation and Flow Characteristics at the Inlet of a Starved Contact—Theoretical Study (81-Lub-22) (A) **D 98**
Flange Loads Measurements in a Cylindrical Roller Bearing (81-Lub-18) (A) **D 97**
Flow and Pressure Heat at the Inlet of Narrow Passages, Without Upstream Free Surface (81-Lub-41) (A) **D 99**
Four Pad Tilting Pad Bearing Design and Application for Multistage Axial Compressors (81-Lub-12) (A) **D 56**
Frequency-Domain Estimation of Linearized Oil-Film Coefficients (81-Lub-7) (A) **D 96**
Fretting Wear and Fretting Fatigue—How Are They Related? (81-Lub-13) (A) **D 97**
Hydrodynamic Lubrication of Finite Slider Bearings:

Effect of Film Shape, and Their Computer Aided Optimum Designs (81-Lub-40) (A) D 99
Inclusions and Service Induced Cracks in a Mature Population of Gas Turbine Engine Bearings (81-Lub-48) (A) D 99
Interactions Between Dynamic Normal and Frictional Forces During Unlubricated Sliding (81-Lub-15) (A) D 97
Lubrication of a Cylinder on a Plane With a Non-Newtonian Fluid Considering Cavitation (81-Lub-2) (A) D 95
Lubrication Mechanism of Solid Lubricants in Oils (81-Lub-50) (A) D 99
Measurement of Oil Film Thickness for Application to Elastomeric Stirling Engine Rod Seals (81-Lub-9) (A) D 96
The Morphology of Surface Damage Caused by Friction (81-Lub-14) (A) D 97
A Numerical Solution of the Thermal Elastohydrodynamic Lubrication in an Elliptical Contact (81-Lub-29) (A) D 97
Observation of Pressure Variation in the Cavitation Region of Submerged Journal Bearings (81-Lub-11) (A) D 96
The Pivoted, Spherical Cap Slider Bearing (81-Lub-4) (A) D 95
Regimes of Traction in Concentrated Contact Lubrication (81-Lub-16) (A) D 96
Roller Skewing Behavior in Roller Bearings (81-Lub-45) (A) D 99
Simplified Solution for Stresses and Deformations (81-Lub-54) (A) D 100
Single Pass Rub Phenomena—Analysis and Experiment (81-Lub-55) (A) D 100
Singularity Considerations in Numerical Solution of Contact Stress Problems (81-Lub-53) (A) D 99
Slip Measurement in an Angular Contact Ball Bearing (81-Lub-33) (A) D 98
Some Observations in High Pressure Rheology of Lubricants (81-Lub-17) (A) D 96
A Study on Thermal Behavior of Large Seal-Ring (81-Lub-27) (A) D 97
Theoretical Effects of Rigid Particle Additives in Noncyclic Squeeze Films (81-Lub-28) (A) D 97
Theory of Lubrication With Ferrofluids: Application to Short Bearings (81-Lub-39) (A) D 99
The Thermal Behavior of Oscillating Squeeze Films (81-Lub-26) (A) D 97
Toward a Mechanical Wear Equation (81-Lub-5) (A) D 96
A Unified Model for Rolling Contact Life Prediction (81-Lub-42) (A) D 99
Viscoplastic Lubrication of Asperities (81-Lub-43) (A) D 99
Wear and Friction of Nitrogen Ion Implanted Steel (81-Lub-20) (A) D 97

LUCS
New Materials Have Broad Range of Properties (BTR) Je 84
Ludwig, L. P. Observation of Pressure Variation in the Cavitation Region of Submerged Journal Bearings (81-Lub-11) (A) D 96
Luh, J. Y. S. Optimum Path Planning for Mechanical Manipulators (80-WA/DSC-18) (A) Mr 115
Luk, Y. W. A Microprocessor-Based Interactive Beam Analysis Program with Graphics—Dynamic and Static (81-DE-12) (A) Ag 78
Lunardini, V. J. Phase Change Around a Circular Cylinder (80-WA/HT-5) (A) Ap 103
Lund, J. W. The Pivoted, Spherical Cap Slider Bearing (81-Lub-4) (A) D 95
Lunifeld, D. Coal-Oil Mixtures: A Near-Term Approach to Conserving Petroleum (81-Pet-22) (A) My 90
Lusko, J. Coal Mixing: System and Equipment Design Considerations (81-JPGC-Pwr-25) (A) N 113
Luzzato, E. Protection of Continuous Structures Against Vibrations by Active Damping (81-DET-88) (A) N 106
Lyall, A. E. The Technical/Economic Issues and Reliability Requirements for Tampa Electric Company's Big Bend Unit #4 FGD System (81-JPGC-Pwr-35) (A) D 93
Lyle, F. F., Jr. Stress Corrosion Cracking of Low Pressure Turbine Discs—An Industry Survey (81-JPGC-Pwr-30) (A) D 92
Lynch, P. Thoughts on Freedom (C) Ja 48
Lyon, R. H. Industrial Noise Pollution—Part 3: The Practical Function of Acoustical Engineering S 42; Use of Cepstra in Acoustical Signal Analysis (81-DET-138) (A) D 92
Lyons, D. W. Sampling for Confidence Interval Estimation of the Fiber Shape Factor (80-Tex-5 (A) F 122
Lyrio, A. A Prediction Method for Planar Diffuser Flows (81-FE-5) (A) Ag 83

M

M-Integral
Nondestructive Evaluation of the J and M Integrals (81-APM-2) (A) S 83
Ma, H. H. Thermal Radiation Properties of ThO_2 in Contact with Sodium and Steel (81-HT-66) (A) O 96
Mable, H. H. The Determination of the Lewis Form Factor and the AGMA Geometry Factor J for External Spur Gear Teeth (80-DET-59) (A) Mr 106
MacBain, J. C. An Investigation of Dual Mode Phenomena in a Mistuned Bladed Disk (81-DET-133) (A) D 91
MacCallum, R. L. Further Studies of the Influence of Thermal Effects on the Predicted Acceleration of Gas Turbines (81-GT-21) (A) Je 105
Macchi, E. Efficiency Prediction for Axial-Flow Turbines Operating With Nonconventional Fluids (81-GT-15) (A) Je 105
Macelroy, R. D. The CELSS Program; An Overview of its Structure and Use of Computer Modeling (81-ENAs-36) (A) S 88
Macey, J. P. Optimum Balancing of Combined Pitching and Yawing Moments in High-Speed Machinery (80-DET-7) (A) Mr 106
Mach, J. Application of Production Systems Analysis to Determine Completion Sensitivity on Gas Well Production (81-Pet-13) (A) My 89; Application of Systems Analysis Techniques in Optimizing Gas Lift Installations (81-Pet-33) (A) My 91
Machine Dynamics
Design Sensitivity Analysis of Planar Mechanism and Machine Dynamics (80-DET-6) (A) F 119
Machine Joints
Wave Transmission and Energy Dissipation of Structural and Machine Joints (81-DET-17) (A) D 86
Machine Links
An Analytical and Experimental Study of the Acoustical Noise Produced by Machine Links (81-DET-93) (A) D 90
Machine Maintenance
Lubrication Fundamentals (CB) D 106
Machine Oils
Lubrication Mechanism of Solid Lubricants in Oils (81-Lub-50) (A) D 99
Machine Tool Imports
Surge in Machine Tool Imports (BTR) F 56
Machine Tool Structure
Explicit Identification of Machine Tool Structure and Cutting Process Using Bivariate Time Series Models (80-WA/Prod-27) (A) My 84
Machine Tools
Mathematical Modelling for Predicting Effects of Structural Changes in Machine Tools (81-DET-39) (A) O 104
Machine Transmissions
Compilation and Compression of Mathematical Model for a Machine Transmission (80-DET-104) (A) Mr 110
Machine Unit
Machine Unit with Controlled Impulse Progressive Transmission (80-DET-36) (A) F 121
Machine Vibration
Vincent's Circle as a Tool for Machine Vibration Optimization Techniques (81-DET-78) (A) O 105
Machinery Components
Fatigue Considerations for Sizing Machinery Components (81-DE-8) (A) Ag 78
Machinery Noise
Energy Input, Vibrational Level and Machinery Noise; Some Simple Relationships (81-DET-96) (A) N 106
Noise Due to Resonant Excitation of a Rotating Cylinder (81-DET-98) (A) N 106
Machines
Lubrication Fundamentals (CB) N 116
Machining
Improving Productivity in Machining (81-DE-2) (A) Ag 77
On the Mechanics of Chip Segmentation in Machining (80-WA/Prod-3) (A) My 82
Tool-Chip Contact Length in Orthogonal Machining (80-WA/Prod-23) (A) My 83
Machining Centers
CAD/CAM Loop for Automatic Machining of Large Parts (BTR) My 45
Optimum Process Design for a Single-Stage Multifunctional Production System (80-WA/Prod-19) (A) My 83
Machining Conditions
Machining Parameter Optimization for Multistation Synchronous Machines (80-DET-60) (A) Mr 107
MacLeon, G. NASA-AMES Life Sciences Flight Experiments Program—1980 Status Report (80-ENAs-34) (A) Mr 113
Madey, R. Adsorption Interference in Mixtures of Trace Contaminants Flowing Through Activated Carbon Absorber Beds (80-ENAs-17) (A) Mr 112
Madjid, A. H. Superplants for Power Generation: A Way to Improve Coal Utilization (80-WA/CD-2) (A) Ja 97
Madni, I. K. An Analysis of the Study-Power Natural Circulation Experiments in LMFBR Plants (80-WA/HT-41) (A) Ap 106
Magellanic Clouds
Surveying Unexplored Areas of Galaxy (BTR) S 52
Maglev Vehicles
Modeling and Dynamic Response of Maglev Vehicles Subjected to Crosswind Gusts (80-WA/DSC-8) (A) Mr 115
Magnetic Field
Heat Transfer in Developing MHD Channel Flows in an Inclined Magnetic Field (80-WA/HT-12) (A) Ap 104
Magnetic Fusion
Mirror Fusion—Another Path to Fusion Power Jl 24
Magnetic Refrigeration
Magnetic Refrigeration for Spacecraft Systems (81-ENAs-47) (A) O 101
Magnetic Refrigerators
Can Magnetic Refrigerators Liquefy Hydrogen at High Efficiency (81-HT-82) (A) O 99
Magnetic Separation
A Prism Effect (ES) O 27
Magnetic Stresses
Theory of Lubrication With Ferrofluids: Application to Short Bearings (81-Lub-39) (A) D 99
Magnetic Support Systems
Analytical and Experimental Investigation of Magnetic Support Systems. Part I: Analysis (81-Lub-31) (A) D 98; Part II: Experimental Investigation (81-Lub-32) (A) D 98
Magnetohydrodynamics
TRW Backs MHD (ES) Jl 19
Magnets
Monster Magnets (ES) My 18
Mahlab, M. Fatigue Crack Growth in Pressurized Water Reactor Feedwater Lines (81-PVP-2) (A) Ag 79
Mahlab, M. S. 3-D Finite Element Analysis for the Investigation of Feedwater Line Cracking in PWR Steam Generators (81-PVP-3) (A) Ag 78
Mahoney, J. B. A PWR Secondary System Behavior for Postulated Pipe Rupture (80-WA/NE-1) (A) Ja 98
Mahr, D. Bulk Handling—Advances in Mining, Transportation and Processing (80-WA/MH-9) (A) Ap 96
Mahrenholtz, O. Eigenfrequencies and Mode Shapes of a Free-Standing, Twisted, Tapered and Rotating Blade with Respect to an Elastically Supported Root (81-DET-125) (A) N 108
Maintenance
Maintenance Planning, Control and Documentation, 2nd Ed. (CB) My 92

Maintenance Concepts
Engine Maintenance Cost Calculation Method (81-GT-34) (A) **Je 107**
Majette, M. A Comparison of Natural Frequency Prediction Methods for Flexible Manipulator Arms (80-WA/DSC-19) (A) **Mr 116**
Majumadar, B. C Effect of Surface Roughness on Elastohydrodynamic Line Contact (81-Lub-23) (A) **D 98**
Mak, A. F. A No-Slip Edge Crack on a Bimaterial Interface (80-WA/APM-14) (A) **Ja 100**
Makay, E. Freed Pump Vibration Research—Interstage Fluid Annuli (80-JPGC/Pwr-20) (A) **F 117**
Hydraulic and Dynamic Instabilities in Feed Pumps in Large Fossil and Nuclear Applications in the U.S.A. (80-JPGC/Pwr-21) (A) **F 118**
Maki, E. R. Optimum Balancing of Combined Pitching and Yawing Moments in High-Speed Machinery (80-DET-7) (A) **Mr 106**
Malanoski, S. B. Fan/Foundation Interaction—A Simplified Calculation Procedure (80-JPGC/Pwr-10) (A) **F 117**
Malik, M. A. K. Editor, Retiring (C) **N 73**
Malkin, S. Adaptive Control Optimization of Grinding (80-WA/Prod-12) (A) **My 82**
Malkus Transitions
An Application of the Optical Correlation Computer to the Detection of the Malkus Transitions in Free Convection (80-WA/HT-27) (A) **Ap 105**
Mall, S. Impacted Notch Bend Specimens (81-PVP-14) (A) **Ag 79**
Maloney, K. L. Overview of Major Causes of Pulverizer Failures (80-JPGC/Pwr-5) (A) **F 116**
Management
Applied Project Management Technology Workshop (NB) **Ap 80**
The Competence Game: How to Find, Use, and Keep Competent Employees (CB) **O 106**
Conveyor Systems and Innovations (80-WA/MH-16) (A) **Ap 97**
Failure Analysis and Expert Witness for Products Liability—A Responsibility for the Engineering Profession (80-WA/Mgt-6) (A) **Ja 103**
A Method for Evaluating the Relative Worth of Research and Development Tasks to Prioritize Them (80-WA/Mgt-4) (A) **Ja 103**
No Man Is an Island (80-WA/Mgt-5) (A) **Ja 103**
The Planning and Execution of Engineering Work in a Project Environment (80-WA/Mgt-2) (A) **Ja 102**
Survey Reveals Value of 'Bottom Up" Management (NR) **S 69**
Technology Assessment: A Background Review (80-WA/Mgt-3) (A) **Ja 102**
The Theory and Practice of Management: Part Art, Part Science (80-WA/Mgt-1) (A) **Ja 102**
'Tried and True' Work Principles Still Apply (NR) **Ap 75**
Working With People: Human Resource Management in Action (CB) **Ap 108**
Management Decisions
Management Decision Methods for Managers of Engineering and Research (CB) **Ap 108**
Management Sciences
Management of Research and Innovation (Studies in the Management Sciences) (CB) **S 90**
Manganese Additive
The Effects of a Volatile Fireside Manganese Additive on Coal-Fired Utility Boiler Operation (80-JPGC/Fu-4) (A) **Ja 98**
Manhole Covers
Woman Engineer Designs Manhole Cover (BTR) **JI 54**
Manipulator Arms
A Comparison of Natural Frequency Prediction Methods for Flexible Manipulator Arms (80-WA/DSC-19) (A) **Mr 115**
Manipulator Hand
The Dextrous Workspace (80-DET-108) (A) **Mr 110**
Manipulators
Design Considerations for Manipulator Workspace (81-DET-79) (A) **D 90**
Hybrid Position/Force Control of Manipulators (80-WA/DSC-23) (A) **Mr 115**
Robots and Manipulators **N 42**
Manning, G. B. Gas Turbine Materials Evaluation Program Utilizing Coal Derived Gaseous Fuel (81-GT-65) (A) **Je 109**
Manning, M. P. The Use of Nickel and Cobalt Catalysts in a Bosch Reactor (80-ENAs-15) (A) **Mr 111**
Mannini, A. Air-Freon Integrated Environmental Conditioning System for Trainer Subsonic Aircraft (81-ENAs-33) (A) **O 100**
Manolescu, N. I. System Analysis and Structural Criteria Concerning Diesel Locomotives (80-DET-105) (A) **Mr 110**
Manpower Resources
Interrelationships Between Methods Engineering and Producibility Engineering (81-DE-3) (A) **Ag 77**
Manual Adaptive Control
Improving Productivity in Machining (81-DE-2) (A) **Ag 77**
Manual Valves
Industry News (NB) **N 90**
Manufacturers
Expanded Socio-Technical Outlook Urged (C) **Ap 55**
Manufacturing
A History of the Columbus Section of ASME: 1920-1980 (CB) **Ag 84**
Manufacturing Engineers
CAD/CAM Systems and Applications: Projections (NR) **Ag 61**
SME Certification Programs (EN) **N 95**
SME Grant (EN) **N 95**
Manufacturing Plants
Machinery's Handbook, Revised 21st Ed. (CB) **N 115**
Manufacturing Process
MAPS-1: Computer-Aided Design System for Preliminary Material And Manufacturing Process Selection (80-DET-51) (A) **Mr 106**
Manufacturing Process Selection
Use of Figures of Merit in Computer-Aided Material and Manufacturing Process Selection (81-DET-103) (A) **N 107**
Manufacturing Programs
American Can Co. Pledge (EN) **D 80**
Manufacturing Systems
Flexible Manufacturing Systems, Metal Cutting and Material Conservation (80-WA/Prod-6) (A) **My 82**
INFO/MFG Exposition and Conference, review (NR) **Mr 78**
Manufacturing Tolerances
The Optimization Problem with Optimal Tolerance Assignment and Full Acceptance (80-DET-47) (A) **F 121**
Optimum Sensitivity Synthesis of a Cam System Incorporating Manufacturing Tolerances (80-DET-31) (A) **F 119**
Mao, C.-P. A Unified Analysis of Concurrent Modes of Flame Spread (81-HT-10) (A) **O 94**
Mao-lin, Y. Application of Scaling in Afterburner Test and Development (81-GT-194) (A) **JI 89**
Maps
Metric Memos (NB) **N 90**
Marcal, P. V. Elections to Fellow Grade **S 78**
Marchis, V. Air-Freon Integrated Environmental Conditioning System for Trainer Subsonic Aircraft (81-ENAs-33) (A) **O 100; Simulation Experiments of Phase-Change Thermal Systems (80-ENAs-25) (A) Mr 112**
Margolis, D. L. Bond Graph Models for Simulating HVAC Systems (80-WA/Sol-16) (A) **Ap 93**
Marich, F. Praise for Profiles (C) **F 46**
Marine Environment
A High-Pressure Swivel for Natural Gas Service and Oscillating Motion in a Marine Environment (81-Pet-19) (A) **My 90**
Marine Fuel
Coal-Fired Ships (ES) **O 26**
Marine Gas Turbines
Aerodynamic Design and Experimental Study of Marine Gas Turbine Exhaust Volutes (81-GT-143) (A) **JI 84**
Development of FT9 Marine Gas Turbine (81-GT-197) (A) **JI 89**
Dust and Sand Protection for Marine Gas Turbines (81-GT-74) (A) **Je 110**
IM 2000 Marine Gas Turbine-Design, Development and Testing (81-GT-196) (A) **JI 89**
Marine Life
Researchers Study Effects of Acid Rain on Marine Life (NR) **N 85**
Marine Pipelines
Tow Techniques for Marine Pipeline Installation (81-Pet-30) (A) **My 90**
Marine Pipes
Vibrations of Long Marine Pipes Due to Vortex Shedding (81-Pet-29) (A) **My 91**
Marine Propulsion
Compact Closed Cycle Brayton System for Marine Propulsion (80-WA/GT-4) (A) **Ap 102**
Marine Resources
Steel for Deep Submersibles (IF) **Je 73**
Marine Riser Joint
Development of an Instrumented Marine Riser Joint (81-Pet-25) (A) **My 90**
Marine Sources
Marine Sources of Energy (CB) **D 102**
Marine Spey
Progress in the Development of the Marine Spey, SM1A (81-GT-186) (A) **JI 89**
Marine Steam Generators
Ahoy Coal-Fired Ships! (ES) **O 27**
Market Research
A Market Research Effort Leading to the Development of a High-Efficiency 10,000-shp Gas Turbine System (81-GT-190) (A) **JI 89**
Marler, W. R. A CAD/CAM Graphics System with Relative Datums and Tolerances (81-DET-108) (A) **N 107**
Marlowe, D. E. Mechanical Engineering Education for the 80s **Ag 30**
Marquis, J. A. Thermal Radiation Properties of Pure H_2O Ice from 0.70 to 1.35 Micrometers (81-HT-67) (A) **O 99**
Mars
Mars Mosaic (BTR) **N 75**
Martian Phenomena Discovered by Viking (BTR) **JI 53**
Marsden, J. E. Controllability of Distributed Bilinear Systems; Recent Results and Open Problems (80-WA/DSC-27) (A) **Mr 116**
Marsh, R. H. Doe's Fuel Use Regulations: A Cause for Concern **JI 37**
Marsh, W. D. *(author)* Economics of Electric Utility Power Generation (CB) **Ap 108**
Marshlands
Oil Spill Cleanup and Protection Techniques for Shorelines and Marshlands. (Pollution Technology Review, No. 78) (CB) **N 116**
MARTA
Railroads—Is There Light at the End of the Tunnel? (NR) **JI 65**
Martin, B. W. Flow Transition Phenomena and Heat Transfer Over the Pressure Surfaces of Gas Turbine Blades (81-GT-107) (A) **Je 112**
Martin, J. R. A Comparison of the Second and Third Editions of the ASME Recommended Guide for the Prediction of the Dispersion of Airborne Effluents (80-WA/APC-3) (A) **Ap 102**
Martin, R. B. Development Status of a Preprototype Water Electrolysis Subsystem (81-ENAs-9) (A) **S 86**
Martins, J. A. C. Non-Linear Transient Analysis of Plates by Mixed Elements (81-DET-146) (A) **D 92**
Marx, E. Measure for Measure (C) **F 47**
Ma Shu Qin
Effect of Blade Stagger Angle on Performance of a Transonic Compressor with Low Hub-Tip Ratio (81-GT-177) (A) **JI 88**
Masory, O. Reference-Pulse Circular Interpolators for CNC Systems (80-WA/Prod-7) (A) **My 82**
Masri, S. F. Response of Two Nuclear Power Plant Valves to Dynamic Excitation (81-DET-67) (A) **D 90**
Mass
A Mass is a Mass is a Mass . . . (C) **S 48**
Measure for Measure (C) **F 48**
Metric Meditations (C) **Ag 42**
Mass Transfer
Analysis of Heat and Mass Transfer Within a Sheet of Papermaking Fibers During Drying (81-HT-49) (A) **O 97**
Heat and Mass Transfer in a Fault-Controlled Geothermal Reservoir Charged at Constant Pressure (81-HT-52) (A) **O 97**
Heat and Mass Transfer from a Moist Porous Media of Large Particle Size (81-HT-53) (A) **O 97**
Transient Simultaneous Heat and Mass Transfer in

Moist, Unsaturated Soils (81-HT-50) (A) O 97
Mass Transport Vehicles
Suspension System Synthesis for Mass Transport Vehicles with Prescribed Dynamical Behavior (81-DET-44) (A) O 104
Mast, P. Fracture Criteria of Fibrous Laminated Composites Under In-Plane Multidirectional Loading (80-WA/APM-9) (A) Ja 100
Master Cylinders
Four-Wheel Dual Braking (BTR) Ag 49
Masuda, T. A Study on Thermal Behavior of Large Seal-Ring (81-Lub-27) (A) D 97
Material Conservation
Flexible Manufacturing Systems, Metal Cutting and Material Conservation (80-WA/Prod-6) (A) My 82
Material Processing Development
Material, Design, and Test Aspects of Ceramic Component Development (81-GT-179) (A) Jl 88
Material Response
On the Characterization of Strain-Hardening in Plasticity (81-APM-26) (A) S 85
Materials
Conference on Wear of Materials Probes Metals, Polymers, Ceramics, and Tool Wear, review (NR) Je 78
The Effect of Product Form Upon Fatigue-Crack Growth Behavior in Alloy 718 (81-Mat-1) (A) O 102
Embrittlement of 1¼ Cr-½ Mo Steels in High-Temperature Service (81-Mat-3) (A) O 102
Long-Life Fatigue of Type 316 Stainless Steel of Temperature Up to 593°C (81-Mat-2) (A) O 102
Materials & Energy Ap 35
A National Materials Policy (STV) Jl 77
New Materials Have Broad Range of Properties (BTR) Je 64
Materials Engineering
Water-Cooled Gas Turbine Forged Bucket Development (81-GT-174) (A) Jl 88
Materials Evaluation
Gas Turbine Materials Evaluation Program Utilizing Coal Derived Gaseous Fuel (81-GT-65) (A) Je 109
Materials Experiment Carrier
Materials Experiment Carrier Thermal Control Systems Study (81-ENAs-32) (A) O 100
Materials Handling
The Application of Computer Technology to Distribution (80-WA/MH-14) (A) Ap 97
Automated Storage/Retrieval Systems: A State-of-the-Art Update (80-WA/MH-4) (A) Ap 96
Bulk Handling—Advances in Mining, Transportation and Processing (80-WA/MH-9) (A) Ap 96
Continuous Vacuum Pressure Systems (80-WA/MH-2) (A) Ap 96
Conveyor Systems and Innovations (80-WA/MH-16) (A) Ap 97
Economic Consideration for Automating Unit Handling and Storage (80-WA/MH-6) (A) Ap 96
Gentle Handling Methods for Fragile Particulate Bulk (80-WA/MH-1) (A) Ap 96
Marketplace Developments in Storage Furniture, Racks and Shelves (80-WA/MH-11) (A) Ap 96
Order Selection of Full and Broken Case Goods (80-WA/MH-12) (A) Ap 97
Pneumatic Unloading of Ships and Barges (80-WA/MH-10) (A) Ap 97
Power Generation Using a Downhill Conveyor (80-WA/MH-15) (A) Ap 97
Regional Facilities for Hazardous Waste Disposal (80-WA/MH-13) (A) Ap 97
Rubber Lined Pipelines—An Overview (80-WA/MH-8) (A) Ap 96
Unit Handling—Problems and Opportunities (80-WA/MH-7) (A) Ap 96
Vehicular Operations and New Developments in Unit Handling (80-WA/MH-5) (A) Ap 96
Wear and Operating Cost Reduction of Slurry Pumps by Means of Hydrodynamic Variable Speed Couplings (80-WA/MH-3) (A) Ap 96
Materials Recovery
Solid Waste Conversion to Energy: Current European and U.S. Practice (CB) Mr 119
Materials Science
Material Science Center Opens (NB) D 78
Materials Technology
SDM Conference in Atlanta, preview (NR) Mr 80
Mathematical Basis
A Mathematical Basis for the Random Decrement Vibration Signature Analysis Technique (81-DET-13) (A) N 104
Mathematical Model
Compilation and Compression of Mathematical Model for a Machine Transmission (80-DET-104) (A) Mr 110
Mathematical Modelling for Predicting Effects of Structural Changes in Machine Tools (81-DET-39) (A) O 104
The Use of Mathematical Modeling in the Analysis of Gas Turbine Compressor Unit Test Data (81-GT-217) (A) Jl 91
Mathematicians
Computer Imaging Problem Solved (BTR) N 74
Matta, J. V. The Plant Control System Design for the Clinch River Breeder Reactor Plant (80-WA/DSC-17) (A) Mr 115
Matthew, G. K. The Simultaneous Analytical Synthesis of Mass and Spring Elements in Planar Mechanisms (80-DET-50) (A) Mr 106
Maudin, P. J. Thermal-Hydraulic Differential Sensitivity Theory (80-WA/HT-56) (A) My 84
Maulbetsch, J. S. Are Dry-Cooled Power Plants A Feasible Alternative? O 34
Maule, G. R. Design and Operating Aspects of Campbell Plant Circulating Water System (80-JPGC/Pwr-17) (A) F 117
Maurer, W. C. Mud Pulse Tachometer for Downhole Drilling Motors (81-Pet-3) (A) My 88
Maximum Communication
Emergency Response Facilities for Davis-Besse Nuclear Power Station (81-JPGC-NE-13) (A) N 110
Maximum Correlation
Synthesis of Four-Bar Mechanism with Correlation Concept (80-DET-81) (A) Mr 108
Maybanks, A. Using Microprocessors in Fault Monitoring of Aircraft Electronics (81-GT-138) (A) Jl 86
McAssey, E. V., Jr. A Method for Determining Rewetting Velocity Under Generalized Boiling Conditions (80-WA/HT-40) (A) Ap 106
McCabe, M. E. Evaluation of a Proposed Modification of the F-Chart Method to Include Collector Array Air Leakage (80-WA/Sol-12) (A) Ap 93
McCarthy, G. E. Measurements of Effective Thermal Conductivity and Evaporative Heat Loss in Granular Porous Media (81-HT-58) (A) O 98
McCarthy, J. M. The Curvature Theory of Line Trajectories in Spatial Kinematics (80-DET-18) (A) F 119; Instantaneous Properties of Trajectories Generated by Planar, Spherical, and Spatial Rigid Body Motions (80-DET-19) (A) F 119
McCarthy, K. J. An Investigation of the Relationship Between Partial Pressure of SO_3 and the Corrosion Potential of In 738 in Na_2SO_4 Melts at 900°C (80-WA/CD-3) (A) Ja 97
McCord, R. M. Fiber Optic Probes Monitor Engine Condition Ja 37
McCoy, A. W. Regenerative Gas Turbines for Naval Escort Ships (81-GT-115) (A) Je 112
McDonald, C. F. Closed-Cycle Gas Turbine Applications for Fusion Reactors (81-GT-17) (A) Je 105
McDonald, J. F. Experimental Investigation into the Physics of Arc-Air Metal Gouging Noise Generation (80-WA/NC-12) (A) F 124
McDonald, W. J. Mud Pulse Tachometer for Downhole Drilling Motors (81-Pet-3) (A) My 88
McFarland, E. R. Solution of Plane Cascade Flow Using Improved Surface Singularity Methods (81-GT-169) (A) Jl 87
McGinness, R. J. Retrofitting Utility Power Plants for Cogeneration Using Crossover Pressure Control (81-JPGC-Pwr-33) (A) D 93
McGowan, T. F. An Economic Comparison of Wood and Fossil Fuel Processing Systems (80-WA/Ener-1) (A) Ap 95
McGraw-Hill
McGraw-Hill Yearbook of Science and Technology—1980 (CB) Mr 119
McGuire, M. F. U-Tube PWR Steam Generator Heat Transfer During a Large Loss of Coolant Accident Transient (80-WA/HT-61) (A) My 84
McGuire, P. A. The Effects of Induction Heating Parameters on Controlling Residual Stress in Intermediate Size Pipes (81-PVP-31) (A) Ag 81
McLaughlin, B. R. Considerations in Evaluating Wet and Dry FGD Systems (81-JPGC-Pwr-5) (A) N 110
McNamara, J. E. Environmental Control System Concept Study for a Navy V/STOL Aircraft (80-ENAs-47) (A) Mr 114
McWhirter, A. Application of Airblast Atomizing Fuel Nozzles to Two Prototype Industrial Gas Turbines (81-GT-82) (A) Je 110
Meacham, W. L. Transient Analysis of Rotor-Bearing Systems Using Component Mode Synthesis (81-GT-110) (A) Je 112
Measurement Error
Liquid Custody Transfer Measurement Can be Accurate (81-Pet-26) (A) My 90
Measurement Instruments
Fast, Faster, and Fastest (ES) My 18
Measurement Parameters
Detection and Early Diagnosis of Potential Failures of Rotating Machinery (81-JPGC-Pwr-28) (A) N 113
Measurements
Measure for Measure (C) F 47
Meauze, G. An Inverse Time Marching Method for the Definition of Cascade Geometry (81-GT-167) (A) Jl 87
Mechanical Design
Mechanical Design of a High-Efficiency 7.5-MW (10,000-hp) Gas Turbine (81-GT-210) (A) Jl 90
Planar Polar Stress Elements with Regular and Irregular Joint Freedoms for Mechanical Design (80-DET-71) (A) Mr 107
Mechanical Efficiency
Error Analysis in Evaluating the Mechanical Efficiency of Reciprocating Internal Combustion Engines (81-DGP-10) (A) My 88
Mechanical Engineering
"Hands-On" Learning at Cal Poly Ap 49
Mechanical Engineering: A Century of Progress (CB) Je 116
Mechanical Engineering Education
Mechanical Engineering Education for the 80s Ag 30
Mechanical Engineering Format
Expanded Socio-Technical Outlook Urged (C) Ap 55
Mechanical Engineering Profession
Engineers and Nuclear Weapons (C) O 50
Mechanical Engineering Readers
Wanted: More Technical Reading Matter (C) S 49
Mechanical Engineering Students
Helping the Student Section Help Itself Je 54
Mechanical Engineers
Centennial Issue: Kudos and Comments (C) Ja 48
The Computer and The Mechanical Engineer: A Coming of Age N 29
Mechanical Error
Analysis and Synthesis of Mechanical Error in Cam-Follower Systems (80-DET-22) (A) F 120
Analysis and Synthesis of Mechanical Error in Geneva Mechanisms—A Stochastic Approach Part I: External Geneva Mechanism (80-DET-24) (A) F 120; Part 2: Internal Geneva Mechanism (80-DET-25) (A) F 120
Mechanical Face Seals
Experimental Evaluation of a Mixed Friction Hydrostatic Mechanical Face Seal Model Considering Radial Taper, Thermal Taper, and Wear (81-Lub-38) (A) D 93
Mechanical Feature Pattern Gauge
A Computer Simulation of a True Position Feature Pattern Gauge (81-DE-9) (A) Ag 78
Mechanical Field
Machinery's Handbook, Revised 21st Ed. (CB) N 115
Mechanical Hand
Remote Mechanical Hand (BTR) Ja 61
Mechanical Man
The Bumpy Ride Study (EN) Ja 73
Mechanical Manipulators
An Adaptive Control Scheme for Mechanical Manipulators—Compensation of Nonlinearity and Decoupling Control (80-WA/DSC-6) (A) Mr 114
Optimum Path Planning for Mechanical Manipulators (80-WA/DSC-18) (A) Mr 115
The Workspaces of a Mechanical Manipulator (80-DET-107) (A) Mr 110
Mechanical Parts
Interordering: A New Method of Component Orientation (Studies in Mechanical Engineering, Vol. 2) (CB) Ag 85

Mechanical Power Transmission Components
Industry News (NB) **N 90**
Mechanical Properties
Effect of Temperature Dependent Mechanical Properties on Thermal Stress in Cooled Turbine Blades (81-GT-105) (A) **Je 112**
Mechanical Springs
Springs: Troubleshooting and Failure Analysis (CB) **My 92**
Mechanical Structures
Modal Analysis of Non-Proportionally Damped Mechanical Structures (81-DET-75) (A) **O 105**
Mechanical Systems
Application of Euler Parameters to the Dynamic Analysis of Three-Dimensional Constrained Mechanical Systems (81-DET-123) (A) **D 91**
An Approach for Dynamic Analysis of Mechanical Systems with Multiple Clearances Using Lagrangian Mechanics (81-DET-3) (A) **O 102**
Control of Bilinear System with an Optimal Aim Strategy (80-WA/DSC-43) (A) **Mr 117**
Dynamic Analysis of Mechanical Systems with Intermittent Motion (81-DET-48) (A) **N 105**
Dynamic Analysis of Variators with Half Ball and Two Discs as Non-Holonomic Systems (80-DET-95) (A) **Mr 109**
The Finite Element Analysis of Flexible Components of Mechanical Systems Using a Mixed Variational Principle (80-DET-64) (A) **Mr 107**
A Logical Function Method for Dynamic and Design Sensitivity Analysis of Mechanical Systems with Intermittent Motion (80-DET-39) (A) **F 121**
Mechanical Transmissions
The Toroidal Drive **F 32**
Mechanical Waveguide Theory
A Model for the Analysis of Air Heater Vibrations (81-DET-34) (A) **O 103**
Mechanical Wear
Toward a Mechanical Wear Equation (81-Lub-5) (A) **D 96**
Mechanically Bonded Radiators
Mechanically Bonded Radiators for Locomotive Reliability (80-WA/RT-4) (A) **F 125**
Mechanics
Joint ASME/ASCE Mechanics Conference, review (NR) **S 82**
Mechanics Journals
Mechanics in Action at Toronto IUTAM (NR) **Ja 70**
Mechanism Bearings
A New Solution to Coulomb Friction in Mechanism Bearings: Theory and Application (80-DET-52) (A) **Mr 106**
Mechanism Problems
Mechanism Case Studies V (80-DET-13) (A) **F 118**
Mechanism Synthesis
MECSYN: An Interactive Computer Graphics System for Mechanism Synthesis by Algebraic Means (80-DET-68) (A) **Mr 107**
Mechanisms
Kineto-Elastodynamic Analysis of Mechanisms by Finite Element Formulations (80-DET-103) (A) **Mr 110**
New Finite Elements for Quasi-Static Deformations and Stresses in Mechanisms (80-WA/DSC-35) (A) **Mr 117**
Mechanisms Design
Application of the Theory of Conjugate Surfaces in Mechanisms Design: Part 1—General Concepts (80-DET-29) (A) **F 120**
Mechanistic Paradigms
Design and Control Strategies for CELSS: Integrating Mechanistic Paradigms and Biological Complexities (81-ENAs-43) (A) **O 100**
Meckler, M. *(author)* Energy Conservation in Buildings and Industrial Plants (CB) **Mr 119**
Medical Applications
Medical Applications of Lasers (BTR) **O 56**
Medium Place Aircraft
A New APU for Medium Place Aircraft Environmental Control Systems (81-ENAs-1) (A) **S 85**
Megyesy, E. F. *(author)* Pressure Vessel Handbook, 5th Ed. (CB) **Ag 85**
Mehra, V. K. Frost Formation on Vertical Cylinders in Free Convection (80-WA/HT-22) (A) **Ap 104**
Mei, V. Performance of Cross-Cooled Desiccant Dehumidifiers (80-WA/Sol-34) (A) **Ap 95**
Meierhofer, B. An Investigation of a Preswirled Cooling Airflow to a Turbine Disc by Measuring the Air Temperature in the Rotating Channels (81-GT-132) (A) **Jl 84**
Melkle, K. M. Oil Spill Countermeasures for Canada's Ice-Infested Waters (81-Pet-24) (A) **My 90**
Meissner, H. Treatment of CELSS and PCELSS Waste to Produce Nutrients for Plant Growth (81-ENAs-19) (A) **O 100**
Melting
Melting with a Heated Plate Under Contact Pressure-Variable Property Solution (80-WA/HT-7) (A) **Ap 103**
Membership Goal
We Made It—100,000 Members by 1980! (PS) **F 72**
Memery, J. P. A CAD/CAM Graphics System with Relative Datums and Tolerances (81-DET-108) (A) **N 107**
Memory Cards
Computerized Credit Cards (NB) **F 65**
Credit Cards that Remember (BTR) **Je 67**
Mendelsohn, D. A. Elastodynamic Analysis of an Edge Crack (80-WA/APM-6) (A) **Ja 100**
Mendelson, A. Elections to Fellow Grade **N 103**
Menguc, M. P. Predictions of Radiative Properties of Pulverized Coal and Fly-Ash Polydispersions (81-HT-24) (A) **O 94**
Menguturk, M. A Theory for Fine Particle Deposition in 2-D Boundary Layer Flows and Application to Gas Turbines (81-GT-54) (A) **Je 108**; Use of Cascade and Small Turbine Tests to Determine Erosion of Utility Turbines (81-GT-52) (A) **Je 108**
Menning, R. H. Detection of a Transverse Crack in a Turbine Shaft—The Oak Creek Experience (81-JPGC-Pwr-19) (A) **N 112**
Menzel, H. F. Storm Over S-T View (C) **Ja 49**
Merging Buoyant Jets
An Experimental Investigation of Merging Buoyant Jets in a Crossflow (80-WA/HT-23) (A) **Ap 105**
Meridional Equations
A Fast Numerical Procedure to Solve the Meridional Equations of Motion in a Multistage Axial Flow Turbomachine (81-GT-133) (A) **Jl 85**
Meridith, W. R. Recent Experience in Inservice Examinations (81-NE-1) (A) **S 81**
Merkle, C. L. Predicting Trajectories and Concentrations of Particles in a Grinding Booth (81-FE-23) (A) **S 82**
Mesoscale Numerical Model
Numerical Simulation of Mesoscale Atmospheric Circulations Over Lake Michigan (80-WA/HT-65) (A) **My 85**
Messler, A. A. Carbon Dioxide Effects on Submarines (80-ENAs-32) (A) **Mr 113**
Metabolic Requirements
Development Status of a Preprototype Water Electrolysis Subsystem (81-ENAs-9) (A) **S 86**
Metal Cutting
A Data Dependent Systems Approach to Dynamics of Surface Generation in Turning (80-WA/Prod-25) (A) **My 83**
Flexible Manufacturing Systems, Metal Cutting and Material Conservation (80-WA/Prod-6) (A) **My 82**
Quantitative Relationships for Acoustic Emission from Orthogonal Metal Cutting (80-WA/Prod-26) (A) **My 84**
Metal Gouging
Experimental Investigation into the Physics of Arc-Air Metal Gouging Noise Generation (80-WA/NC-12) (A) **F 124**
Metal Mirrors
Mirror-Polishing Technique for World's Largest CO_2 Lasers (BTR) **N 75**
Metal Substrates
Ceramic to Metal Attachment Using Low Modulus Brunsbond® Pad (81-GT-160) (A) **Jl 86**
Metallic Surfaces
A Method to Measure Contact Pressure between Metallic Surfaces by Changes in Surfaces Roughness (80-WA/Prod-18) (A) **My 83**
Metallic Wire Anchors
Refractory Construction (C) **D 56**
Metals
Metal Decontamination Process (BTR) **My 49**
A National Materials Policy (STV) **Jl 77**
Self-Consistent Determination of Time-Dependent Behavior of Metals (81-APM-11) (A) **S 84**
Meteorites
Diamonds from Heaven (BTR) **Ag 48**
Meteoroid Bumpers
Space Radiator Trade Studies for the 25-kW Power System (80-ENAs-27) (A) **Mr 112**
Meteorological Monitoring
Diffuse Sky Measurements and Determination of Corrected Shadow Band Multiplication Factors (80-WA/Sol-26) (A) **Ap 94**
Meteorological Phenomena
Martian Phenomena Discovered by Viking (BTR) **Jl 53**
Methanation
Synfuels Development (ES) **Mr 36**
Methanation Catalyst
Development of an Advanced Sabatier CO_2 Reduction Subsystem (81-ENAs-11) (A) **S 86**
Methane
The American Power Conference, review (NR) **Ag 54**
Fracture Mechanics Model for Pittsburgh Coal (81-Pet-16) (A) **My 90**
Impact of a Global Warming on Biospheric Sources of Methane and its Climatic Consequences (80-WA/HT-2) (A) **Ap 103**
Laser Detection (ES) **Je 25**
Liquefied-Methane-Powered Airplane (BTR) **D 58**
Methane Gas
A Liability to an Asset (ES) **Ja 20**
Methanol
Alcohol Fuel Vehicle Testing (ES) **Ja 21**
ANSI B133.7 Survey of Gas Turbine Synthetic Liquid Fuels (81-JPGC-GT-8) (A) **D 95**
Catalyst "Whiskers" (ES) **Ja 21**
Combustion of Methanol and Liquefied Butane in a Gas Turbine Combustor (81-GT-50) (A) **Je 108**
Hydrogen from Methanol Fuels Chevy (BTR) **O 56**
The Merits of Methanol (BTR) **Je 63**
The Methanol Car (ES) **N 71**
Methanol Combustion in a 26-MW Gas Turbine (81-GT-64) (A) **Je 109**
Methanol—The Efficient Conversion of Valueless Fuels into a Versatile Fuel and Chemical Feedstock (81-PID-1) (A) **My 86**
Methanol from Solar Energy (IF) **Jl 81**
Versatile Synthetic Methanol (C) **Mr 64**
Methods Engineering
Interrelationships Between Methods Engineering and Producibility Engineering (81-DE-3) (A) **Ag 77**
Methyl Methacrylate
Custom-Made Acrylic Castings (IF) **N 83**
Metric Conversion
CESSE Surveys Metrication (NB) **Je 90**
D.C. to Host Annual Metric Conference (NR) **F 64**
Metric Maps
Metric Memos (NB) **N 90**
Metric System
. . . And Uncle Sam (C) **Ag 42**
Measure for Measure (C) **F 47**
Metric Meditations (C) **Ag 42**
Metric Pandora's Box? (C) **F 46**
Metric Units
Measure for Measure (C) **F 48**
Metrication
CESSE Surveys Metrication (NB) **Je 90**
SI Facts Discontinued (NR) **D 76**
Metrics
Kids Teach Parents Metrics (NB) **S 70**
A Matter of Metrics (C) **My 42**
More Metric Musings (C) **D 57**
Selecting Domestic Wire Ropes for Metric Applications (BTR) **N 78**
Metzger, D. E. Streamwise Flow and Heat Transfer Distributions for Jet Array Impingement with Crossflow (81-GT-77) (A) **Je 110**
Meyer, B. R. "Super Series" Wheel Creep Control System (80-WA/RT-3) (A) **F 125**
Meyer, D. E. Mechanically Bonded Radiators for Locomotive Reliability (80-WA/RT-4) (A) **F 125**
Meyer, J. H. Evaluation of the Impact on CGT Operation when Converting to Crude Oil Fuel (81-GT-207) (A) **Jl 89**
Meyer-Pitroff, R. Combined Gas and Steam Cycle for a Gas-Cooled Solar Tower Power Plant (81-GT-102) (A) **Je 112**
Mezines, S. A. Thermal Performance of a Dielectric Stack Exposed to Pulsed Coherent Radiation (81-ENAs-14) (A) **S 87**

MHD Steam Power Plant
MHD Steam Power—Promise, Progress, and Problems S 30
Miaw, D. C. Use of Figures of Merit in Computer-Aided Material and Manufacturing Process Selection (81-DET-103) (A) N 107
Michael, W. The Optimization Problem with Optimal Tolerance Assignment and Full Acceptance (80-DET-47) (A) F 121
Micro Hydropower
Small and Micro Hydroelectric Power Plants: Technology and Feasibility (Energy Technology Review No. 60) (CB) Ap 109
Microballoons
Recording Fluid Currents by Holography (BTR) Ja 53
Microbial Check Valve
Advanced Microbial Check Valve Development (81-ENAs-45) (A) S 88
Microcomputers
Gas Turbine Data Acquisition Using a Microcomputer (81-GT-83) (A) Je 110
Microcomputer Checks Butt-Weld Accuracy (BTR) O 54
Real-Time Vibration Rate Acquisition and Signal Processing Using a Low-Cost Microcomputer (81-DET-28) (A) O 103
Microfilming
Micrographic Application for Engineering Drawings (81-DET-107) (A) D 90
Microgravity
Tapping The Resources of a New 'Continent' Je 26
Micron Emission
11.5 Micron Emission from Smoke Computed Using Finite Cloud Geometry (80-WA/HT-1) (A) Ap 103
Microphones
Analytical Modeling of Wave Interference Directional Microphones (80-WA/NC-6) (A) F 124
Passive Acoustic Detection of Gas Leaks in Buried Pipes (80-WA/NC-17) (A) F 125
Microprocessing Computers
Computerized Credit Cards (NB) F 65
Microprocessor Control
High-Performance Large-Format Pen Plotter (BTR) F 53
Microprocessor Laboratory
Microprocessor Systems Lab (EN) Mr 82
Microprocessors
Coordinated Sootblowing—A Station Approach (81-JPGC-Fu-7) (A) D 93
Credit Cards that Remember (BTR) Je 67
Recovering Offshore Oil, Gas (BTR) S 54
Using Microprocessors in Fault Monitoring of Aircraft Electronics (81-GT-138) (A) Jl 86
A Versatile Microprocessor Controller for Low-Cost Helicopter Applications (81-GT-137) (A) Jl 85
Middelton, R. The Use of Additives to Reduce Ash Fouling Problems in Lignite-Fired Boilers (80-JPGC/Fu-3) (A) Ja 99
Midha, A. Member Initial Curvature Effects on the Elastic Slider-Crank Mechanism Response (80-DET-72) (A) Mr 108; On the Periodic Response of Cam Mechanism with Flexible Follower and Camshaft (80-WA/DSC-33) (A) Mr 116
Miessner, C. Scale Effects in the Dynamic Transfer Functions for Cavitating Inducers (80-WA/HT-51) (A) Ap 107
Mighty Michigan Powerhouse
HAER's Landmark Contributions (C) O 51
Miksinovic, M. Cold Springing of Piping Systems (81-PVP-26) (A) Ag 81
Mikhail, A. G. Analysis and Asymptotic Solutions Compressible Turbulent Corner Flow (81-GT-149) (A) Jl 86
Miki, S. Preliminary Study on Reheat Combustor for Advanced Gas Turbine (81-GT-29) (A) Je 106
Miksad, R. W. Digital Bispectral Analysis of Nonlinear Wave Couplings in Fluids (81-FE-32) (A) S 83
Mikula, A. M. A Comparison of Tilting Pad Thrust Bearing Lubricant Supply Methods (81-Lub-8) (A) D 96
Mileage
Energy-Saving Motor Oil (BTR) S 52
Military Construction
Enlisting Solar (ES) Jl 19
Milky Way Galaxy
Surveyinbg Unexplored Areas of Galaxy (BTR) S 52
Miller, C. L. Development of FT9 Marine Gas Turbine (81-GT-197) (A) Jl 89
Miller, D. B. *(author)* Working With People: Human Resource Management in Action (CB) Ap 108
Miller, H. P. An Ad-Hoc Method for Convection Dominated Flows (81-FE-15) (A) S 82
Miller, J. D. A Simple Model of Seasonal Sea Ice Growth (80-WA/HT-20) (A) Ap 104
Miller, M. J. Advances in Environmental Control Technology for Coal-Fired Power Plants (81-JPGC-APC-2) (A) D 100
Miller, N. R. A Technique for Kinematic Modelling of Anatomical Joints (80-DET-84) (A) Mr 109
Miller, R. K. An Efficient Technique for the Approximate Analysis of Vibro-Impact (81-DET-16) (A) N 104; Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: P and SV Motion (81-APM-18) (A) S 84
Miller, V. R. Prediction of Aircraft Interior Noise Using the Statistical Energy Analysis Method (81-DET-102) (A) D 90
Milling
Special Aspects of Chatter in Milling (81-DET-18) (A) D 89
Mills, J. C. Direct Reactor Auxiliary Cooling System for the 1000-MWe LMFBR Developmental Plant (81-JPGC-NE-7) (A) N 109
Mills
ASME Landmarks Program (NR) N 87
Milwaukee Section
Mechanical Engineering: A Century of Progress (CB) Je 116
Mine Rescue Workers
Personal Equipment Development for Use in Underground Mining (81-ENAs-48) (A) O 101
Minamura, K. A Theoretical Study on Air Bubble Motion in a Centrifugal Pump Impeller (80-WA/FE-3) (A) My 85
Miner Noise
Continuous Miner Noise (80-WA/NC-4) (A) F 123
Mineral Ores
Minerals Crisis Rivals Energy Crisis (BTR) F 49
Mineral Recycle
Ion-Exchange Chromatography Separation Applied to Mineral Recycle in Closed Systems (81-ENAs-21) (A) O 100
Minerals
Petroleum and Hard Minerals from the Sea (CB) N 115
Minicomputers
Pressure Vessels: An Integrated Approach to Design, Analysis, and Manufacturing (81-DET-119) (A) N 107
Mining
Bulk Handling—Advances in Mining, Transportation and Processing (80-WA/MH-9) (A) Ap 96
Gold Mining in New Guinea (BTR) N 78
Hydraulic Borehole Mining (81-Pet-6) (A) My 89
Mining Without Men Going Underground (81-Pet-21) (A) My 90
Mining Machines
Position Monitor for Mining Machines (BTR) Mr 72
Mining Size Reduction Equipment
Fatigue Design in Mining Size Reduction Equipment (81-PVP-9) (A) Ag 79
Mining Tools
A Role for Boeing in Coal (ES) Ja 21
Minorities
Minorities in Engineering (EN) O 85
Minority Engineer Training
NSF Grants $2.7 Million for Minority Engineer Training (NR) Ag 82
Minority Scholars
Minority Scholars Awarded Fellowships (EN) S 73
Mints, W. H., Jr. Data Acquisition System for Thermal Stress Studies (80-WA/OCE-14) (A) Ap 98
Minute Averages
On-Site Quality Control of Insolation Measurements (80-WA/Sol-25) (A) Ap 94
Mir-Mohamad-Sadegh, A. The Flow of a Non-Newtonian Fluid Past Projections and Depressions (80-WA/APM-8) (A) Ja 100
Mirror Fusion
Mirror Fusion—Another Path to Fusion Power Jl 24
Reflection on Mirror Fusion (C) O 50
Mirror Magnets
Monster Magnets (ES) My 18
Mirrors
Space Telescope Primary Mirror (BTR) Ag 48
Mirsky, E. R. Best Bargain Around: Engineers (C) S 49
Mishima, K. Theoretical Prediction of Onset of Horizontal Slug Flow (80-WA/FE-6) (A) My 85
Mismatches
Management Wrinkles O 80
Missile Structures
Results of a Government and Industry Survey of the Heating Methods Used to Determine Missile Structural Temperatures (80-ENAs-26) (A) Mr 112
Mistakes
Sorry About the Errors (C) F 48
Mistuned Blades
Aeroelastic Characteristics of a Cascade of Mistuned Blades in Subsonic and Supersonic Flows (81-DET-122) (A) N 108
Mistuning
An Investigation of Dual Mode Phenomena in a Mistuned Bladed Disk (81-DET-133) (A) D 91
Mitchell, J. W. An Analytical and Experimental Investigation of the Heat Transfer Mechanisms within Fibrous Media Exposed to Solar Radiation (81-HT-41) (A) O 96; Design Procedure and Applications of Solar-Assisted Series Heat Pump Systems (80-WA/Sol-9) (A) Ap 93; An Experimental Investigation of the Convective Heat Transfer Mechanisms within a Fur Layer (80-WA/HT-28) (A) Ap 105
Mitchell, L. D. Assessment of Bit Life Under Conditions of Rotary-Vibratory Drilling (81-Pet-15) (A) My 89; Improved Methods for the Fast Fourier Transform (FFT) Calculation of the Frequency Response Function (81-DET-8) (A) D 88; A Microprocessor-Based Interactive Beam Analysis Program with Graphics—Dynamic and Static (81-DE-12) (A) Ag 78
Mitchiner, R. G. The Determination of the Lewis Form Factor and the AGMA Geometry Factor J for External Spur Gear Teeth (80-DET-59) (A) Mr 106
Milton, H. Semi-Inverse Method of Computation in Inviscid Transonic Flows—Application to the Design of Turbomachine Blades Profiles (81-GT-206) (A) Jl 90
Mixed Convection
Mixed Convection in Rectangular Channel Flow with Smooth Surfaces and One Heated Wall (81-HT-6) (A) S 88
Mixed Convection in a Wall Plume (81-HT-37) (A) O 98
Transient Laminar Mixed Convection from a Moving Vertical Plate (81-HT-40) (A) O 96
Mixed Elements
Non-Linear Transient Analysis of Plates by Mixed Elements (81-DET-146) (A) D 92
Mixed Flow
The Effect of Impeller Tip Design on the Performance of a Mixed Flow Turbocharger Compressor (81-GT-7) (A) Je 104
Mixing
Rotor Wake Mixing Effects Downstream of a Compressor Rotor (81-GT-98) (A) Je 111
Use of a Tracer Gas Technique to Study Mixing in a Low Speed Turbine (81-GT-86) (A) Je 111
Mixture Theory
An Application of Mixture Theory to Particulate Sedimentation (80-WA/APM-1) (A) Ja 99
Miyakawa, A. Topographical Representation of Interface Pressure Distribution in a Multiple Bolt-Flange Assembly-Measurement by Means of Ultrasonic Waves (81-DE-7) (A) Ag 78
Miyasra, S. Dynamic Stability of a Vibrating Hammer (81-DET-14) (A) D 88
Mizutani, Y. Mechanisms and Characteristics of Combustion of Water-in-Oil Emulsion Sprays (80-WA/HT-36) (A) Ap 105
Mobarak, A. Small Gas Turbine with Large Parabolic Dish Collectors (81-GT-201) (A) Jl 90
Mobility
Greater Mobility for the Disabled (NB) S 70
Modal Analysis
The Bilinear, Modal State Equations For Age-Dependent Growth Control (80-WA/DSC-3) (A) Mr 114
Modal Analysis of Non-Proportionally Damped

Mechanical Structures (81-DET-75) (A) O 105
Model Analysis Using Helicopter Dynamic Test Data (81-DET-30) (A) O 103
Residual Vibration Criteria Applied to Multiple Degree of Freedom Cam Followers (80-DET-3) (A) F 118
Modal Analysis Systems
Development of a Correlated Finite Element Dynamic Model of a Complete Aero Engine (81-DET-74) (A) O 104
Modal Damping Ratios
The Determination of Modal Damping Ratios from Maximum Entropy Spectral Estimates (80-WA/DSC-29) (A) Mr 116
Modal Truncation
A Study of the Modal Truncation Error in the Component Mode Analysis of a Dual-Rotor System (81-GT-144) (A) JI 84
Mode Shapes
Eigenfrequencies and Mode Shapes of a Free-Standing, Twisted, Tapered and Rotating Blade with Respect to an Elastically Supported Root (81-DET-125) (A) N 108
The Natural Frequencies and Mode Shapes of Cables with Attached Masses (81-Pet-10) (A) My 89
Modell, M. Treatment of CELSS and PCELSS Waste Produce Nutrients for Plant Growth (81-ENAs-19) (A) O 100
Modern Kinematics
Computer-Aided Design of Precision Control Linkages in the Classroom (80-WA/DSC-39) (A) Mr 117
Modest, M. F. Radiative Heat Transfer in a Plane-Layer Mixture of Nongray Particulates and Molecular Gases (81-HT-60) (A) O 98
Modest Technology
Modest Technologies for a Complicated World (CB) My 92
Modi, V. J. Dynamics of a Deploying Orbiting Beam-Type Appendage Undergoing Librations (81-DET-63) (A) N 106
Modrey, J. A Rapid Determination of Journal Bearing Characteristics Under Combined Loading (80-DET-62) (A) Mr 107
Modular Construction
Pondering Production Problems in the Deep Sea and Frozen Arctic (NR) N 86
Modular Factory System
Modular Factory System for Greater Productivity (BTR) Je 68
Modular Radiator Systems
Decision Making Support in the Assessment of Modular Radiator Systems (80-ENAs-11) (A) Mr 111
Modulator Retrofitting
Field Experience with Gas Turbine Inlet Air Filtration (81-GT-193) (A) JI 89
Moduleponics
Plants Flourish in Controlled Environment (BTR) Ag 44
Moffat, R. J. Turbulent Boundary Layer Heat Transfer Experiments: A Separate Effects Study on a Convexly Curved Wall (81-HT-78) (A) O 98
Mogul, J. A Corrosion-Erosion Test Rig for High Temperature Turbine Materials Evaluation (81-GT-198) (A) JI 89
Mohamed, M. H. Tensile Properties of Triaxially Woven Fabrics Under Biaxial Loading (80-Tex-3) (A) F 122
Mohammed, D. P. Experimental Studies on the Flow Within the Side Recesses of a Centrifugal Pump Impeller and Casing (80-WA/Fu-7) (A) F 127; (80-WA/FE-7) (A) My 86
Mohler, R. R. Experimental Results in the Modeling and Control of a Small Furnace (80-WA/DSC-31) (A) Mr 116
On the Inverse of a Special Class of Bilinear Systems (80-WA/DSC-13) (A) Mr 115
Mohr, D. Operational Safety and Reliability Research at EBR-II (81-JPGC-NE-11) (A) N 110
Moist Paper
Analysis of Heat and Mass Transfer Within a Sheet of Papermaking Fibers During Drying (81-HT-49) (A) O 97
Moist Porous Media
Heat and Mass Transfer from a Moist Porous Media of Large Particle Size (81-HT-53) (A) O 97
Moist Porous Medium
Transient Simultaneous Heat and Mass Transfer in Moist, Unsaturatad Soils (81-HT-50) (A) O 97
Moisture Separators
Redesign and Replacement of Connecticut Yankee Moisture Separator/Reheater (MSR) Tube Bundles (81-JPGC-Pwr-2) (A) N 110
Moisture Transfer
Moisture Transfer in Concrete Pavements (81-HT-32) (A) O 96
Molecular Gases
Radiative Heat Transfer in a Plane-Layer Mixture of Nongray Particulates and Molecular Gases (81-HT-60) (A) O 98
Molecular Rarefaction
An Experimental Investigation of Molecular Rarefaction Effects in Gas Lubricated Bearings at Ultra-Low Clearances (81-Lub-44) (A) D 99
Molecular Sieves
A Glanmce at Three '81 WAM Sessions (NR) O 73
Moles
Moles at Work (ES) O 27
Molten Glass
Driving Bubbles Out of Glass (BTR) Ag 45
Molten Salt
Development of a Solar Thermal Central Heat Receiver Using Molten Salt (81-Sol-2) (A) S 80
Molten-Salt Receiver
Five-MW(th) Solar Receiver Passes Test (BTR) Je 69
Monitoring Program
A Performance Monitoring Program for Coal Fired Steam-Electric Generating Plants (81-JPGC-Pwr-22) (A) N 112
Monitoring Systems
Generator Monitoring System (81-JPGC-Pwr-23) (A) N 112
O_2 Sensing for Environmental Control and Monitoring Systems (80-ENAs-41) (A) Mr 113
Monitors
Atmospheric Monitoring in Submersibles (80-ENAs-31) (A) Mr 113
A Monitor for Atmospheric Composition and Contaminants in Closed Environments (80-ENAs-35) (A) Mr 113
Monkeys
Simian Servants (BTR) JI 52
Monometallic Nozzles
Water-Cooled Gas Turbine Monometallic Nozzle Fabrication and Testing (81-GT-162) (A) JI 87
Monotonic Loading
The Rate (Time)-Dependent Behavior of Ti-7Al-2Cb-1 Ta Titanium Alloy at Room Temperature Under Quasi-Static Monotonic and Cyclic Loading (81-APM-7) (A) S 84
Monotonicity
Monotonicity in Goal and Geometric Programming (80-DET-46) (A) Mr 105
Monsoons
Monsoon's Secrets Under Scrutiny (BTR) F 52
Montakhab, A. Preliminary Design of Dry Cooling Tower for the Closed Cycle Gas Turbine HTGR (81-GT-20) (A) Je 105
Monte Carlo Procedure
A Monte Carlo Procedure for Two-Dimensional Steady Conduction at Straight Convecting Boundaries (80-WA/HT-42) (A) Ap 106
Montalro, S. L. P. On the Spectral Emissivity of Pulverized Coal and Char (81-HT-23) (A) O 94
Month, L. A. An Application of the Poincare Map to the Stability of Nonlinear Normal Modes (80-WA/APM-4) (A) Ja 99
Monti, G. J. Forging Simulations and Properties Achievable for Large Waspaloy Forgings for Land-Based Gas Turbines (81-GT-84) (A) Je 110
Moody, E. Direct Reactor Auxillary Cooling System for the 1000-MWe LMFBR Developmental Plant (81-JPGC-NE-7) (A) N 109
Moon, F. C. Experiments on Chaotic Motions of a Forced Nonlinear Oscillator: Strange Attractors (80-WA/APM-2) (A) Ja 99
Moore, B., III Design and Control Strategies for CELSS; Integrating Mechanistic Paradigms and Biological Complexities (81-ENAs-43) (A) O 100
Moore, E. M., Jr. Specifying Linepipe Suitable for Safe Operation in Sour Wet Service (81-Pet-1) (A) My 88
Moore, W. E. Hot Gas Cleanup Program for Pressurized Fluidized Bed Combustor Combined Cycle Power Generation (81-JPGC-GT-5) (A) D 95
Moorhouse, E. W. Use of Freeze Conditioning Agents and a Thawing Product on Coal (80-JPGC/Fu-5) (A) Ja 98
Mooring, B. Analysis of a Classical Straight Line Mechanism Using Interactive Graphics (81-DET-105) (A) N 107
Mooring Technology
Moored Systems Designed to Sense Deep Ocean Earthquakes (80-WA/OCE-10) (A) Ap 98
Morehouse, J. H. Thermal and Economic Assessment of Ground-Coupled Storage for Residential Solar Heat Pump Systems (80-WA/Sol-10) (A) Ap 93
Morgan, A. P. A Quick Method for Testing if a Second Degree Polynomial Has Solutions in a Given Box (81-DET-118) (A) N 108
Morgan, W. B. Elections to Fellow Grade D 87
Mori, K. Preliminary Study on Reheat Combustor for Advanced Gas Turbine (81-GT-29) (A) Je 106
Morishita, T. A Development of the Fuel Atomizing Device Utilizing High Rotational Speed (81-GT-180) (A) JI 88
Morizumi, S. J. On the Simplifications of Mathematical Model for Nongrey Gas Radiation Heat Transfer (81-HT-64) (A) O 97
Moroccan Shale
Moroccan Shale, U.S. Technology (ES) JI 18
Morphology
The Morphology of Surface Damage Caused by Friction (81-Lub-14) (A) D 97
Morris, T. L. An Analytical and Experimental Study of the Acoustical Noise Produced by Machine Links (81-DET-93) (A) D 90
Morrison, F. A., Jr. Droplet Dynamics in Creeping Flows (81-APM-29) (A) S 85
Morrow, T. B. Mixing and Dilution of Water Soluble Hazardous Chemicals Released in Navigable Rivers (81-FE-17) (A) S 81
Morse, A. A. The Influence of Swirl on the Flow Characteristics of a Reciprocating Piston-Cylinder Assembly (80-WA/FE-8) (A) My 86
Mortazavi, H. Computation of Radiation View Factors for Surfaces with Obstructed Views of Each Other (81-HT-57) (A) O 98
Morton, J. On the Bucking Design of Spherical Shells (81-PVP-32) (A) Ag 81
Mosaic
Mars Mosaic (BTR) N 75
Mosimann, J. Combined Friction and Material Damping of Resonant Steam Turbine Blade Response (81-DET-136) (A) D 92
Moss, M. Stored Energy of Gamma-Irradiated 97 Percent Pure Rocksalt (80-WA/HT-53) (A) Ap 106
Mota Soares, C. A. Non-Linear Transient Analysis of Plates by Mixed Elements (81-DET-146) (A) D 92
Motakef, S. Critical Heat Flux in the Channels of a Closed-Loop Water-Cooled Turbine (81-HT-74) (A) O 98
Mote, C. D., Jr. Circular Saw Vibration Control by Induction of Thermal Membrane Stresses (80-WA/Prod-8) (A) My 82
Motion
Dynamic Stability of a Vibrating Hammer (81-DET-14) (A) D 88
Instantaneous Properties of Trajectories Generated by Planar, Spherical, and Spatial Rigid Body Motions (80-DET-19) (A) F 119
Motion and Time Study: Design and Measurement of Work, 7th Ed. (CB) My 92
Stability of Motion of Elastic Planar Linkages With Application to Slider Crank Mechanism (81-DET-6) (A) N 104
Motion Regulation System
The Basic Motion Regulation System for a Quadruped Walking Vehicle (80-DET-34) (A) F 120
Motion Simulation
Motion Simulation of an Articulated Robotic Arm Subjected to Static Forces (80-DET-102) (A) Mr 110
Motion Specification
Application of B-Spline Functions to the Motion-Specification of Cams (80-DET-28) (A) F 120
Motive Power Designs
Progress in Railway Mechanical Engineering (1979-1980 Report of Survey Committee)—Locomotives (80-WA/RT-12) (A) F 126

Motor Fuel
Wanted—Ethanol Entrepreneurs (ES) **Ap 28**
Motor Leakage
The Block-Lift in Axial Piston Hydraulic Motors (81-FE-25) (A) **S 82**
Motor Oil
Energy-Saving Motor Oil (BTR) **S 52**
Motor Vehicles
Detroit Expected to Gain Ground Against Imports (BTR) **My 47**
System Analysis and Structural Criteria Concerning Diesel Locomotives (80-DET-105) (A) **Mr 110**
Motorcycle Suspension
Computer-Aided Analysis and Experimental Verification of a Motorcycle Suspension (81-DET-84) (A) **D 90**
Motors
Dynamic Response of an Electric Motor-Linkage System During Startup (80-DET-54) (A) **Mr 106**
Moving Arbor
A Spring Coiling Machine Based on a Moving-Arbor and Retracting-Coiling-Point Concept (81-DET-1) (A) **D 88**
Moving Belt
Dynamic Behavior of a Moving Belt Supported on Elastic Foundation (80-DET-55) (A) **Mr 106**
Moving Links
A Classification of Coupler-Line Envelopes From Hinged Four-Bar Linkages (80-DET-42) (A) **F 121**
Moving Loads
On the Stability of a Composite Beam With Initial Stress to Moving Loads (81-APM-25) (A) **S 85**
Moving Vertical Plates
Transient Laminar Mixed Convection from a Moving Vertical Plate (81-HT-40) (A) **O 96**
Mow, V. C. Elections to Fellow Grade **Ja 95**
Moyer, D. W. Effects of Ultra-Clean and Centrifugal Filtration on Rolling-Element Bearing Life (81-Lub-35) (A) **D 97**
Mud Pulse Tachometer
Mud Pulse Tachometer for Downhole Drilling Motors (81-Pet-3) (A) **My 88**
Mueller, W. A. Unconventional Processes for Food Regeneration in Space: An Overview (81-ENAs-35) (A) **S 87**
Mufflers
Computer Design of Pneumatic Rock Drills and Mufflers (81-DET-99) (A) **D 91**
Energy Efficient Muffler for Reduction of Exhaust Noise Generated by a Pneumatic Grinder (80-WA/NC-9) (A) **F 124**
Mujahid, A. Diffuse Sky Measurements and Determination of Corrected Shadow Band Multiplication Factors (80-WA/Sol-26) (A) **Ap 94**
Muki, R. Elastostatic Far-Field Behavior in a Layered Half Space Under Surface Pressure (80-WA/APM-7) (A) **Ja 100**
Mulholland, G. Smoke Filling in an Enclosure (81-HT-8) (A) **S 89**
Mulholland, R. J. Stochastic Properties of Compartment Models (80-WA/DSC-37) (A) **Mr 117**
Mulik, P. R. Effect of Water Injection for NO_x Reduction with Synthetic Liquid Fuels Containing High Fuel-Bound Nitrogen in a Gas Turbine Combustor (81-GT-51) (A) **Je 106**; High Temperature Removal of Alkali and Particulates in Pressurized Gasification Systems (81-GT-67) (A) **Je 109**
Mullikin, H. F. More Metric Musings (C) **D 57**
Multi-Room Buildings
Variable Elimination in the Home Fire Code (81-HT-3) (A) **S 88**
Multi-Speed Gear Trains
General Gear Diameter Equations for the Synthesis of Multi-Speed Gear Trains (81-DET-117) (A) **D 92**
Multichannel Telemetry System
The Use of Multichannel Radio Telemetering Techniques for Stress and Temperature Measurements in Gas Turbine Rotating Components (81-GT-116) (A) **Je 112**
Multiclient Program
Multiclient Laser Program (EN) **N 95**
Multifunctional Production System
Optimum Process Design for a Single-Stage Multifunctional Production System (80-WA/Prod-19) (A) **My 83**
Multilayer Shrink Fitted Vessels
Optimum Design and Creep Relaxation of Dissimilar-Material Multilayer Shrink Fitted Vessels (81-PVP-30) (A) **Ag 81**
Multipass Turning
Optimization of Multipass Turning with Constraints (80-WA/Prod-22) (A) **My 83**
Multiplate Systems
Dynamics of Coupled Fluid-Structure Multiplate Systems (81-DET-145) (A) **D 91**
Multiple Clearances
An Approach for Dynamic Analysis of Mechanical Systems with Multiple Clearances Using Lagrangian Mechanics (81-DET-3) (A) **O 102**
On the Prediction of Journal-Bearing Separation in High Speed Mechanisms with Clearances (80-WA/DSC-33) (A) **Mr 117**
Multiple Scattering
Multiple Scattering of Waves in Irregularly Laminated Composites (80-WA/APM-22) (A) **Ja 102**
Multiport Diffusers
Application of Zone-Matching Methodology to Interacting Submerged Multiport Diffusers (81-FE-12) (A) **Ag 83**
Multiroom Fire Senarios
An Experimental Study of Upper Hot Layer Stratification in Full-Scale Multiroom Fire Senarios (81-HT-9) (A) **S 89**
Multisection Compressors
Equivalent Performance Testing of Multisection Compressors (81-GT-150) (A) **Jl 86**
Multistage Axial Compressors
Four Pad Tilting Pad Bearing Design and Application for Multistage Axial Compressors (81-Lub-12) (A) **D 96**
Multistage Compressors
Design Analysis of High-Efficiency Low-Stress Ceramic Gas Turbines (81-GT-130) (A) **Jl 84**
Multitoothed Cutter
Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part 1: Plain Milling with a Single-Toothed Helical Cutter (80-WA/Prod-4) (A) **My 82**; Part 2: Plain Milling with a Multitoothed Helical Cutter (80-WA/Prod-5) (A) **My 82**
Multivariate Linear Systems
A Test for Time Dependence of Multivariate Linear Systems (80-WA/DSC-30) (A) **Mr 116**
Mulville, D. Fracture Criteria of Fibrous Laminated Composites Under In-Plane Multidirectional Loading (80-WA/APM-9) (A) **Ja 100**
Municipal Refuse
Refuse-Derived Fuels (80-JPGC/Fu-2) (A) **Ja 99**
Munson, B. R. Rotational Inviscid Flow in a Variable Area Annulus, Pipe or Channel (80-WA/FE-14) (A) **My 86**
Mura, T. A Dislocation Model for Fatigue Crack Initiation (81-APM-3) (A) **S 83**
Murakami, M. A Theoretical Study on Air Bubble Motion in a Centrifugal Pump Impeller (80-WA/FE-3) (A) **My 85**
Muramatsu, N. Transient Torque Produced in Main Shaft of Electric Hoist During Motor Start-Up and Emergency Brake Operations (81-DET-60) (A) **N 105**
Murdock, J. W. Calculation of the Theoretical Critical Flow Rate of Saturated Steam (80-WA/PTC-3) (A) **Ap 101**
Murin, J. M. The Potential for Use of Peat Blends with Coal for Electric Power Generation (81-JPGC-Fu-2) (A) **D 93**
Murphy, E. F. Editor, Retiring (C) **N 72**
Murphy, R. C. Analysis and Identification of Subsynchronous Vibration for a High Pressure Parallel Flow Centrifugal Compressor (81-DET-57) (A) **N 105**
Murray, P. R. On the Buckling Design of Spherical Shells (81-PVP-32) (A) **Ag 81**
Mussels
The Incredible Mussel (BTR) **Jl 51**
Muszynska, A. A Parametric Study of Dynamic Response of a Discrete Mode of Turbomachinery Bladed Disk (81-DET-137) (A) **D 91**
Myklebust, A. Dynamic Response of an Electric Motor-Linkage System During Startup (80-DET-54) (A) **Mr 106**; MECSYN: An Interactive Computer Graphics System for Mechanism Synthesis by Algebraic Means (80-DET-68) (A) **Mr 107**
Mysore, R. Pressure Vessels: An Integrated Approach to Design, Analysis, and Manufacturing (81-DET-119) (A) **N 107**

N

Nabio, J. C. Ceramic to Metal Attachment Using Low Modulus Brunsbond® Pad (81-GT-160) (A) **Jl 86**
Nadesu, L. J. Monitoring of Nuclear Power Plant Reactor Vessel Thermal Transients and Fatigue Usage Factors (81-PVP-12) (A) **Ag 79**
Nadis, S. J. *(editor)* Energy Strategies: Toward a Solar Future (CB) **F 129**
Nafis, D. The Potential Role of Aerobic Biological Waste Treatment in Regenerative Life Support Systems (81-ENAs-20) (A) **S 87**
Nagamatsu, B. Noise Reduction in Heat Recovery Steam Generators (81-DET-101) (A) **D 91**
Naganathan, G. New Finite Elements for Quasi-Static Deformations and Stresses in Mechanisms (80-WA/DSC-35) (A) **Mr 117**
Naghdi, P. M. On the Characterization of Strain-Hardening in Plasticity (81-APM-26) (A) **S 85**
Nagy, E. J. Vincent's Circle as a Tool for Machine Vibration Optimization Techniques (81-DET-78) (A) **O 105**
Nahm, A. H. Effect of Grain Flow Orientation on Rolling Contact Fatigue Life of AISI M-50 (81-Lub-57) (A) **D 100**
Naik, A. S. Forced Flow Cooling of a Volumetrically Heated Porous Layer (81-HT-46) (A) **O 97**
Naixing, C. New Correlations of the Two-Dimensional Turbine Cascade Aerodynamic Performance (81-GT-128) (A) **Jl 84**
Najjar, Y. A. H. Radiation and Smoke from the Gas Turbine Combustor Using Heavy Fuels (81-HT-21) (A) **O 94**
Nakaishi, C. V. Controlled Combustion of a Varying Low-Btu Coal-Derived Gas (81-GT-134) (A) **Jl 85**; Materials Exposure Test Facilities for Varying Low-Btu Coal-Derived Gas (81-GT-170) (A) **Jl 87**
Nakajima, M. Factors Affecting Blade Ash-Erosion in Axial Induced Draft Fans (80-JPGC/Pwr-7) (A) **F 116**
Nakhamkin, M. Optimization Design Considerations for Cogeneration Plants (81-JPGC-GT-7) (A) **D 95**; Optimization of Gas Turbine Cycles with Variable Number of Combustion, Compressor, and Inter-Cooler Stages (81-JPGC-GT-6) (A) **D 95**
Nakra, B. C. Vibration Analysis of a Flexible System Mounted on a Viscoelastic Sandwich Beam (81-DET-64) (A) **N 106**
Naraghi, M. H. N. A Formulation for Radiative View Factors from Spheres to a Class of Axisymmetric Bodies (80-WA/HT-58) (A) **Ap 107**; Radiation Configuration Factors Between Disks and a Class of Axisymmetric Bodies (81-HT-56) (A) **O 97**
Narang, B. S. Analysis of Laminar Forced Convection Heat Transfer in the Entrance Region of a Flat Duct with Uniform Wall Temperature (81-HT-29) (A) **O 95**
Narasimhan, T. N. Heat and Mass Transfer in a Fault-Controlled Geothermal Reservoir Charged at Constant Pressure (81-HT-52) (A) **O 97**
Narayanan, T. V. Conceptual Design of an Advanced Water/Steam Receiver for a Solar Thermal Central Power System (81-Sol-5) (A) **S 80**
Narrow Passages
Flow and Pressure Heat at the Inlet of Narrow Passages, Without Upstream Free Surface (81-Lub-41) (A) **D 99**
NASA Research
NASA Research in Aeropropulsion (81-GT-96) (A) **Je 111**
Nason, J. R. Lightside Atmospheric Revitalization System for Space Shuttle Orbiter (81-ENAs-26) (A) **S 87**
National Bureau of Standards
Speaking of SI. . . (C) **Ag 42**
National Energy Plan
Making Windpower an Important Part of a National Energy Plan (81-Pet-11) (A) **My 89**

National Officers
Wanted: Proposals and Supporters for ASME National Officers (NR) **Ap 72**
National Priorities
Productivity, Professionalism, and the Public Interest **Je 58**
National Referendum
. . . And Uncle Sam (C) **Ag 42**
National Research Council
Minority Scholars Awarded Fellowships (EN) **S 73**
National Science Foundation
CAD/CAM Consortium (EN) **F 67**
NSF Awards Joint Research Grant (EN) **Je 72**
NSF Expands Research Program for Small Firms (NR) **F 63**
NSF Forms Ocean Drilling Office (NB) **D 78**
NSF Grants $2.7 Million for Minority Engineer Training (NR) **Ag 62**
NSF Plans Shift from Basic Science to Engineering (NR) **Je 71**
Who's Eligible for Production Research Grants? (NR) **Ap 75**
Nation's Budget
Budget Reconciliation (WW) **Ag 70**
Natural Circulation
An Analysis of the Steady-Power Natural Circulation Experiments in LMFBR Plants (80-WA/HT-41) (A) **Ap 106**
Natural Convection
Numerical Study of Heat Transfer in Rectangular Air Enclosures of Aspect Ratio Less Than One (80-WA/HT-43) (A) **Ap 106**
A Numerical Study of Natural Convection in a Horizontal Porous Layer Subjected to an End-to-End Temperature Difference (80-WA/HT-39) (A) **Ap 106**
Operational Safety and Reliability Research at EBR-II (81-JPGC-NE-11) (A) **N 110**
A Study of Non-Darcy Natural Convection from a Vertical Heated Surface in a Saturated Porous Medium (81-HT-45) (A) **O 97**
Natural Disasters
Earthquake Research (STV) **F 71**
Natural Frequencies
A Comparison of Natural Frequency Prediction Methods for Flexible Manipulator Arms (80-WA/DSC-19) (A) **Mr 116**
Dynamic Evaluation of a Nuclear Main Steam Isolation Valve Actuator (81-DET-32) (A) **O 104**
Formulas of Natural Frequency Prediction for Thin Circular Cylinders (81-DET-77) (A) **O 105**
The Natural Frequencies and Mode Shapes of Cables with Attached Masses (81-Pet-10) (A) **My 89**
Natural Frequencies of Rotating Bladed Discs Using Clamped-Free Blade Modes (81-DET-124) (A) **N 108**
Natural Gas
The Challenge of LNG in the 1980s **Mr 46**
Energy Sources to 1990 Predicted; U.S. Policy Called "Dead Wrong" **Mr 88**
A High-Pressure Swivel for Natural Gas Service and Oscillating Motion in a Marine Environment (81-Pet-19) (A) **My 90**
The Performance of Portable Evacuation Compressors in Gas Transmission Service (81-GT-140) (A) **Jl 85**
Pipelining Gas from the Canadian High Arctic (81-Pet-20) (A) **My 90**
Power Generation Efficiency (IF) **D 65**
Re-Examination of Design Criteria for Natural Gas Compressor Station "Ravenstein"—Holland (81-GT-188) (A) **Jl 88**
Natural Waste Waters
A Mathematical Method for Prediction of Optimal pH and Temperature for Nitrification in Well-Aerated Natural and Domestic-Waste Waters (81-ENAs-24) (A) **O 101**
Naval Program
The Navy PATE Program (81-GT-189) (A) **Jl 88**
Naval Research Laboratory
A History of the Naval Research Laboratory Contributions to Submarine Life Support Systems (80-ENAs-29) (A) **Mr 112**
Naval Reserve
Engineers Neded for Naval Reserve (NR) **D 76**
Naval Ships
Regenerative Gas Turbines for Naval Escort Ships (81-GT-115) (A) **Je 112**
Navigable Rivers
Mixing and Dilution of Water Soluble Hazardous Chemicals Released in Navigable Rivers (81-FE-17) (A) **S 81**
Navy V/STOL Aircraft
Environmental Control System Concept Study for a Navy V/STOL Aircraft (80-ENAs-47) (A) **Mr 114**
Nayak, J. H. Instantaneous Kinematics of Multiple-Degree-of-Freedom Motions (80-DET-53) (A) **Mr 106**
Nayak, L. Singularity Consideration in Numerical Solution of Contact Stress Problems (81-Lub-53) (A) **D 99**
Neal, J. W. Hot Gas Cleanup Program for Pressurized Fluidized Bed Combustor Combined Cycle Power Generation (81-JPGC-GT-5) (A) **D 95**
Needelman, W. M. Effects of Ultra-Clean and Centrifugal Filtration on Rolling-Element Bearing Life (81-Lub-35) (A) **D 97**
Neely, H. H. Sodium-Water Reaction Testing in Support of LMFBR Steam Generator Development (81-JPGC-NE-3) (A) **N 109**; U.S. Large Leak Sodium-Water Reaction Test Program (80-WA/NE-3) (A) **Je 96**
Nell, J. T. Sintering Microstructure and Properties of Si_3N_4 and SiC Based Structural Ceramics (81-GT-220) (A) **Jl 91**
Nelson, B. Burke Nelson Named New Executive Director of ASME (NR) **Ag 61**
Nelson, C. W. Putting Engineering Education to Work **O 28**
Nelson, E. Type and Dimensional Synthesis of Casement Window Mechanisms (80-DET-78) (A) **Mr 108**
Nelson, H. D. Iterative Determination of Squeeze Film Damper Eccentricity for Flexible Rotor Systems (81-DET-87) (A) **D 90**; Transient Analysis of Rotor-Bearing Systems Using Component Mode Synthesis (81-GT-110) (A) **Je 112**
Nelson, J. E. Experience with In-Service Water Cleaning of Boiler Fireside Deposits (80-JPGC/Fu-6) (A) **Ja 99**
Nelson, J. G. Designing for Three Parallel ID Fan Operation (81-JPGC-Pwr-8) (A) **N 111**
Nelson, R. A. Forced Convective Post-CHF Heat Transfer and Quenching (80-WA/HT-69) (A) **My 85**
Nelson, R. A., Jr. Results and Predictions of Scaled, Nuclear Large Break Loss-of-Coolant Experiments (80-WA/HT-49) (A) **Ap 106**
Nelson, W. G. Thermal Control Subsystem Definition for Science and Applications Platform (81-ENAs-30) (A) **S 87**
Nemat-Nasser, S. Approximate Description of Crack Kinking and Curving (81-APM-22) (A) **S 85**; On Branched, Interface Cracks (81-APM-20) (A) **S 84**
Neologisms
Origin of Boojum (BTR) **Ag 45**
Neptune
Astronomers Estimate Neptune's Rotation (BTR) **D 51**
Nervegna, N. Decision Making Support in the Assessment of Modular Radiator Systems (80-ENAs-11) (A) **Mr 111**; On Pallet Mounted Deployable Radiator Systems (81-ENAs-29) (A) **S 88**
Nervous System
The Revolution in Neurochemistry (BTR) **O 53**
Nethercutt, R. M. Boiler Heat Transfer Model for Operator Diagnostic Information (81-JPGC-Pwr-14) (A) **N 111**
Neurochemistry
The Revolution in Neurochemistry (BTR) **O 53**
Neutrinos
Neutrinos and the Nature of the Universe (BTR) **Ja 54**
Neutron Absorber
Development of a Self-Actuated Shutdown System (81-JPGC-NE-8) (A) **N 109**
Neutrons
Jets Inspected with Neutrons (BTR) **My 50**
Zeroing in on the Big Bang (BTR) **O 58**
New Administration
Congressional Battles to Watch (WW) **F 70**
New ASME Editor
Beardsley to Succeed Jaklitsch as ASME Editor (NR) **O 75**
New ASME President
The Year Ahead with President Gaither **Jl 20**
New Continent
Tapping The Resources of a New 'Continent' **Je 26**
New Energy Source
K-Fuel (ES) **Ja 20**
New Member Society
AAES Update (NR) **Mr 81**
New Members
We Made It—100,000 Members by 1980! (PS) **F 72**
New Technologies
Manufacturing/Engineering Applications Center (EN) **D 80**
Newtons
A Mass is a Mass is a Mass. . . (C) **S 48**
A Matter of Metrics (C) **My 42**
Metric Meditations (C) **Ag 42**
Ng, K. W. Aerodynamic Noise Generation in Control Valves (80-WA/NC-8) (A) **F 124**
Nicastro, G. J. Elections to Fellow Grade **Je 102**
Nicholas, J. C. Analysis and Identification of Subsynchronous Vibration for a High Pressure Parallel Flow Centrifugal Compressor (81-DET-57) (A) **N 105**; Four Pad Tilting Pad Bearing Design and Application for Multistage Axial Compressors (81-Lub-12) (A) **D 96**
Nichols, C. C. Ice Protection of Engine Air Inlet for Cruise Missile Applications (80-ENAs-2) (A) **Mr 111**
Nickel-Hydrogen Battery
A Space Technology Spinoff (ES) **Ag 21**
Nicolet, W. E. Galileo Probe Forebody Entry Thermal Protection: Aerothermal Environments and Heat Shielding Recuirements (80-ENAs-24) (A) **Mr 112**
Nielsson, G. E. Radiation Heat Transfer in an Irregular Enclosure with Axial Flow (81-HT-70) (A) **O 98**
Nijhawan, S. M. Parametric Effects on Vapor Non-Equilibrium in Post-Dryout Heat Transfer (80-WA/HT-50) (A) **Ap 107**
Nikiforuk, P. N. A Test for Time Dependence of Multivariate Linear Systems (80-WA/DSC-30) (A) **Mr 116**
Nikravesh, P.E. Application of Euler Parameters to the Dynamic Analysis of Three-Dimensional Constrained Mechanical Systems (81-DET-123) (A) **D 91**
Nimmer, R. P. Parametric Design Analysis of a Hybrid Composite Flywheel Using a Laminated Central Disc and a Filament Wound Outer Ring (80-DET-97) (A) **Mr 110**
Nishi, M. Optimum Strut-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) (A) **Ag 83**
Nishioka, T. An Analysis of, and Some Observations on, Dynamic Fracture in an Impact Test Specimen (81-PVP-18) (A) **Ag 80**
Nitrogen
Effect of Fuel Nitrogen and Hydrogen Content on Emissions in Hydrocarbon Combustion (81-GT-63) (A) **Je 109**
Nitrogen-Analysis Technique (BTR) **N 78**
Nitrogen Supply System Based on Hydrazine Dissociation (81-ENAs-27) (A) **O 101**
Nitrogen Fuels
Evaluation of Advanced Combustors for Dry NO_x Suppression with Nitrogen Bearing Fuels in Utility and Industrial Gas Turbines (81-GT-125) (A) **Je 113**
Low NO_x Combustion Systems for Burning Heavy Residual Fuels and High-Fuel-Bound Nitrogen Fuels (81-GT-109) (A) **Je 113**
Nitrogen Ion Implantation
Wear and Friction of Nitrogen Ion Implanted Steel (81-Lub-20) (A) **D 97**
Nitrogen Oxides
Emission Control (ES) **Ag 21**
Nitta, K. An Experiment and Model of a Fire Plume Rising from a Burning Heat Source of Finite Size (81-HT-5) (A) **S 89**
Noble, P. A. Coal-Fired Unit Size Selection. . . Is Bigger Better? (81-JPGC-Pwr-34) (A) **D 93**
Nocturnal Radiation
Nocturnal Radiation from a Solar Collector (80-WA/Sol-35) (A) **Ap 95**
Nodal Derivatives
An Isoparametric Finite Element With Nodal Derivatives (81-APM-1) (A) **S 83**
Noe, R. R. Improvement in Performance and

Availability of Currently Operating MSR's (80-JPGC/Pwr-12) (A) F 117

Noise

Analysis of Fly-Shuttle Loom Noise by Multi-Channel Digital Signal Processing Techniques (81-DET-100) (A) N 106

Effects of Process Parameters on Hammer Noise (81-DET-95) (A) N 106

Industrial Noise Pollution—Part 1: The Nature and Extent of the Problem JI 34; Part 2: Identifying and Controlling Industrial Noise Sources Ag 24; Part 3: The Practical Function of Acoustical Engineering S 42

Measuring Antenna Efficiency: A Lunar Approach (BTR) My 46

Prediction of Aircraft Interior Noise Using the Statistical Energy Analysis Method (81-DET-102) (A) D 90

Noise Control

On the Acoustical Implications of Vortex Shedding from an Exhaust Pipe (80-WA/NC-16) (A) F 125

Aerodynamic Noise Generation in Control Valves (80-WA/NC-8) (A) F 124

Analytical Modeling of Wave Interference Directional Microphones (80-WA/NC-6) (A) F 124

On Circular Pipe Wall Vibratory Response Excited by Internal Acoustic Fields (80-WA/NC-13) (A) F 124

Continuous Miner Noise (80-WA/NC-4) (A) F 123

Energy Efficient Muffler for Reduction of Exhaust Noise Generated by a Pneumatic Grinder (80-WA/NC-9) (A) F 124

Experimental Investigation into the Physics of Arc-Air Metal Gouging Noise Generation (80-WA/NC-12) (A) F 124

Fluid-Resonator Response to Hydrodynamic Pressure Oscillations (80-WA/NC-7) (A) F 124

Industrial Noise Pollution—Part 4: An Effective Hearing Conservation Program O 31

Introduction to Design Specification Criteria for Acoustical Insulation (80-WA/NC-10) (A) F 124

An Investigation of the Mechanics and Noise Associated with Coal Cutting (80-WA/NC-1) (A) F 123

Locally and Nonlocally Reacting Flexible Porous Layers; A Comparison of Acoustical Properties (80-WA/NC-14) (A) F 124

Numerical Techniques in Linear Duct Acoustics—A Status Report (80-WA/NC-2) (A) F 124

Passive Acoustic Detection of Gas Leaks in Buried Pipes (80-WA/NC-17) (A) F 125

Point Admittance of Cylindrical Shells With and Without Ring-Stiffening (80-WA/NC-5) (A) F 124

Power Plant Noise Control (81-JPGC-Pwr-15) (A) N 111

Sound Transmission Through a Cylindrical Pipe Wall (80-WA/NC-3) (A) F 123

Sources of Noise Produced During Pneumatic Chipping Hammer Operation (80-WA/NC-11) (A) F 124

A Study of Valve Noise Generation Processes for Compressible Fluids (80-WA/NC-15) (A) F 125

Noise Pollution

Industrial Noise Pollution—Part 1: The Nature and Extent of the Problem JI 34

Noise Reduction

Introduction to Design Specification Criteria for Acoustical Insulation (80-WA/NC-10) (A) F 124

Noise Reduction in Heat Recovery Steam Generators (81-DET-101) (A) D 91

Squeeze Film Die Support as a Means of Noise Reduction in Forging Machines (81-DET-97) (A) D 90

Noise Sources

Pressure Relief Valve Noise Attenuation (81-PVP-38) (A) Ag 82

Noise Suppressors

Noise Suppressors for Jet Engine Testing (80-ENAs-28) (A) Mr 112

Nollett, A. R. An Update of Solid Waste Resource Recovery Technology: Improved Economics through Potential Penetration of New Markets for Recycled Products (80-ENAs-9) (A) Mr 111

Nominees

Nominees Sought for Pi Tau Sigma/ASME Awards (NR) D 74

Nonconforming Contacts

Analysis of Starvation Effects on Hydrodynamic Lubrication in Nonconforming Contacts (81-Lub-52) (A) D 100

Noncontacting Face Seals

Dynamic Analysis of Noncontacting Face Seals (81-Lub-10) (A) D 96

Nonconventional Fluids

Efficiency Prediction for Axial-Flow Turbines Operating With Nonconventional Fluids (81-GT-15) (A) Je 105

Nonequilibrium Flashing

Nonequilibrium Flashing Model for Rapid Pressure Transients (81-HT-35) (A) O 95

Nonequilibrium Vapor Generation

A Nonequilibrium Vapor Generation Model for Flashing Flows (81-HT-84) (A) O 99

Nonfuel Minerals

Minerals Crisis Rivals Energy Crisis (BTR) F 49

Nongray Particulates

Radiative Heat Transfer in a Plane-Layer Mixture of Nongray Particulates and Molecular Gases (81-HT-60) (A) O 98

Nongrey Gases

On the Simplifications of Mathematical Model for Nongrey Gas Radiation Heat Transfer (81-HT-64) (A) O 97

Nonholonomic Dynamic Systems

Modeling of Nonholonomic Dynamic Systems With Applications (81-APM-12) (A) S 84

Non-Holonomic Systems

Dynamic Analysis of Variators with Half Ball and Two Discs as Non-Holonomic Systems (80-DET-95) (A) Mr 109

Nonintercooled Commercial Plants

HTGR-GT Systems Optimization Studies (80-WA/GT-3) (A) Ap 102

Nonlinear Analysis

Comparative Study of Direct Numerical Integration Schemes in Linear and Nonlinear Analysis of a Dynamic System (80-WA/DSC-26) (A) Mr 116

Nonlinear Control Systems

Estimating Reachability Boundaries for Resource Management Systems (80-WA/DSC-5) (A) Mr 114

Nonlinear Damage Cumulation

Nonlinear Damage Cumulation in Solution-Treated and Aged Titanium 6A1-4V (81-GT-106) (A) Je 112

Nonlinear Normal Modes

An Application of the Poincare Map to the Stability of Nonlinear Normal Modes (80-WA/APM-4) (A) Ja 99

Non-Linear Problems

Methods of Optimization for Non-Linear Problems (80-DET-65) (A) Mr 107

Nonlinear Stiffness

Finite Journal Bearing with Nonlinear Stiffness and Damping. Part 1: Improved Mathematical Models (81-DET-51) (A) D 89

Nonlinear Systems

On the Dynamic Simulation of Large Nonlinear Mechanical Systems: Part I—An Overview of the Simulation Technique. Substructuring and Frequency Domain Consideration (80-DET-66) (A) Mr 107; Part II—The Time Integration Technique and Time Response Loop (80-DET-67) (A) Mr 107

Nonlinear Theory

A Nonlinear Theory of Viscoelasticity for Application to Elastomers (80-WA/APM-18) (A) Ja 100

Nonlinear Wave Couplings

Digital Bispectral Analysis of Nonlinear Wave Couplings in Fluids (81-FE-32) (A) S 83

Non-Newtonian Fluid

The Flow of a Non-Newtonian Fluid Past Projections and Depressions (80-WA/APM-8) (A) Ja 100

Nonnuclear Test Facility

An Investigation of Small Break Loss-of-Coolant Phenomena in a Small Scale Nonnuclear Test Facility (80-WA/NE-2) (A) Ja 96

Nonparallelism

Stability of Developing Flow in a Pipe—Nonparallel Effects (81-APM-13) (A) S 84

Nonporous Coal Particles

Predicted Burning Times of Nonporous Coal Particles as a Function of Pressure and Particle Size (80-WA/Fu-5) (A) F 127

Non-Reactive Gases

Atmospheric Monitoring for Submarine Applications (80-ENAs-33) (A) Mr 113

Nonreheat Gas Turbines

Comparison of the HTTT Reheat-Gas-Turbine Combined Cycle with the HTTT Nonreheat Gas-Turbine Combined Cycle (81-GT-69) (A) Je 109

Nonstationary Oscillation

Passage of a Rotor Through a Critical Speed (81-DET-58) (A) N 105

Nonsymmetric Clearance Effects

Fractional-Frequency Rotor Motion Due to Nonsymmetric Clearance Effects (81-GT-145) (A) JI 84

Normative Software

Computer Standards: The Need and the Challenge F 40

Northern Compressor Stations

Design Concepts and Equipment Selection Processes for Northern Compressor Stations (81-GT-131) (A) JI 84

Norwood, F. R. A Model to Estimate Forces on Conical Penetrators Into Dry Porous Rock (81-APM-15) (A) S 84

NoSanchez, M. Application of B-Spline Functions to the Motion Specification of Cams (80-DET-28) (A) F 120

Notardonato, J. Evaluation of Advanced Combustors for Dry NO_x Suppression with Nitrogen Bearing Fuels in Utility and Industrial Gas Turbines (81-GT-125) (A) Je 113

Notre Dame

New Dean at Notre Dame (EN) JI 74

Novick, A. S. Design and Preliminary Results of a Fuel Flexible Industrial Gas Turbine Combustor (81-GT-108) (A) Je 113

Noyes, R. *(author)* Small and Micro Hydroelectric Power Plants: Technology and Feasibility (Energy Technology Review No. 60) (CB) Ap 109

Nozzle Exit

Effects of Nozzle Exit Turbulence on the Spreading (or Widening) Rate of Plane Free Jets (81-FE-22) (A) S 82

Nozzles

Application of Water Cooling for Improved Gas Turbine Fuel Flexibility and Availability (81-GT-68) (A) Je 109

Mechanical, Thermal and Hydraulic Design of a Composite Construction Water-Cooled Gas Turbine Nozzle (81-JPGC-GT-3) (A) D 95

Mechanical, Thermal and Hydraulic Design of a Monometallic Water-Cooled Gas Turbine Nozzle (81-HT-77) (A) O 99

Water-Cooled Gas Turbine Monometallic Nozzle Fabrication and Testing (81-GT-162) (A) JI 87

Nuclear Blast Response

Nuclear Blast Response of Airbreathing Propulsion Systems: Laboratory Measurements with an Operational J-85-5 Turbojet Engine (81-GT-164) (A) JI 87

Nuclear Energy

Against Mumbo Jumbo (C) JI 46

Don't Cold-Shoulder Coal (C) My 42

Nuclear Power: The Human Element (C) Ap 56

Nuclear Engineering

Computer Intelligence Design for Automatic Inspection of Steam Generator Tubes (81-NE-2) (A) S 81

Data Analysis and Analytical Predictions of a Steam Generator Tube Bundle Flow Field for Verification of 2-D T/H Computer Code (81-JPGC-NE-1) (A) N 109

Development of a Self-Actuated Shutdown System (81-JPGC-NE-8) (A) N 109

Direct Reactor Auxiliary Cooling System for the 1000-MWe LMFBR Developmental Plant (81-JPGC-NE-7) (A) N 109

Double-Wall Tube Steam Generator for Breeder Nuclear Plants (81-JPGC-NE-2) (A) N 109

Emergency Response Facilities for Davis-Besse Nuclear Power Station (81-JPGC-NE-13) (A) N 110

Heat Exchanger Applications During TMI-2 Post-Accident Cooldown (81-JPGC-NE-9) (A) N 110

An Investigation of Small Break Loss-of-Coolant Phenomena in a Small Scale Nonnuclear Test Facility (80-WA/NE-2) (A) Ja 96

LDA Measurement of Droplet Behavior Across Tie Plate During Dispersed Flow Portion of LOCA Reflood (80-WA/NE-4) (A) Ja 96

Method of Analysis of CRBRP Transients for the Steam Generator (81-JPGC-NE-5) (A) **N 109**
Nuclear Power and Energy Uses (80-WA/HE-5) (A) **Ja 96**
Operating Experience of the EBR-II Steam Generating System (81-JPGC-NE-4) (A) **N 110**
Operational Safety at the FFTF (81-JPGC-NE-6) (A) **N 109**
Operational Safety and Reliability Research at EBR-II (81-JPGC-NE-11) (A) **N 110**
Primary Loop Heat Exchanger for HTGR Plant Residual Heat Removal and Auxiliary Cooling System (81-JPGC-NE-10) (A) **N 110**
A PWR Secondary System Behavior for Postulated Pipe Rupture (80-WA/NE-1) (A) **Ja 96**
Recent Experience in Inservice Examinations (81-NE-1) (A) **S 81**
The Role of Advanced Converters (80-WA/NE-6) (A) **Ja 97**
Role of Advanced Reactors in Electricity Generation (80-WA/NE-7) (A) **Ja 97**
Scholarships for Careers in Nuclear Engineering (EN) **D 79**
Sodium-Water Reaction Testing in Support of LMFBR Steam Generator Development (81-JPGC-NE-3) (A) **N 109**
U.S. Large Leak Sodium-Water Reaction Test Program (80-WA/NE-3) (A) **Ja 96**

Nuclear Engineering Specialists
Passed With Flying Colors! (ES) **O 27**

Nuclear Equipment
Nuclear Equipment Data Bank (ES) **Ja 20**

Nuclear Facilities
New Way to Treat Nuclear and Carcinogenic Waste (BTR) **O 58**

Nuclear Field
Handling Radioactivity: A Practical Approach for Scientists and Engineers (CB) **Ag 85**

Nuclear Fuel Utilization
Improving Nuclear Fuel Utilization (ES) **F 22**

Nuclear Fusion
The OHTE Concept (ES) **N 71**

Nuclear Plants
Passed With Flying Colors! (ES) **O 27**
Recent Experience in Inservice Examinations (81-NE-1) (A) **S 81**

Nuclear Power
The Future of Nuclear Power in the U.S. **F 26**
How Can We Prevent Nuclear Sabotage? (C) **D 56**
Nuclear Name Calling (C) **S 49**
Nuclear Power and Energy Uses (80-WA/NE-5) (A) **Ja 96**
Nuclear's Record (C) **Mr 66**
Questions for Nuclear Advocates (C) **My 42**
In Spite of Human Nature (C) **Ag 43**
Storm Over S-T View (C) **Ja 49**

Nuclear Power Plants
Ammonia Bottoming Cycle Development at Electricité de France for Nuclear Power Plants (81-GT-178) (A) **Jl 88**
Atom Plant Certified as Cogeneration Facility (BTR) **My 49**
Control of a Nuclear Power Plant with Once-Through Steam Generators (80-WA/DSC-24) (A) **Mr 115**
EBR-11 Gets Cogeneration Status (ES) **Ag 20**
Heat Exchanger Applications During TMI-2 Post-Accident Cooldown (81-JPGC-NE-9) (A) **N 110**
Monitoring of Nuclear Power Plant Reactor Vessel Thermal Transients and Fatigue Usage Factors (81-PVP-12) (A) **Ag 79**
Operational Experience with Large Steam Turbines in Nuclear Power Plants (80-JPGC/Pwr-4) (A) **F 118**
Optimization of the HHT-1640 MW(th) Demonstration Nuclear Power Plant (HHT-Project) (81-GT-13) (A) **Je 105**
Radioactive Waste from Nuclear Power Plants (CB) **D 102**
Response of Two Nuclear Power Plant Valves to Dynamic Excitation (81-DET-67) (A) **D 90**
Robot System Assists in Nuclear Plant Repairs (BTR) **Ja 61**
Storm Over S-T View (C) **Ja 50**
Welding Is Crucial (ES) **O 26**

Nuclear Power Stations
Emergency Response Facilities for Davis-Besse Nuclear Power Station (81-JPGC-NE-13) (A) **N 110**

Nuclear Properties
Gmelin Handbuch der Anorganischen Chemie, 8th Ed. Uran Ergänzungshand A2 (CB) **Ap 109**

Nuclear Quality Assurance Committee
Storm Over S-T View (C) **Ja 51**

Nuclear Reactor Vessels
Recent Experience in Inservice Examinations (81-NE-1) (A) **S 81**

Nuclear Reactors
Computer-Aided Reactor Analysis (ES) **Ag 21**
Improving Nuclear Fuel Utilization (ES) **F 22**
The Response of a Thermal Barrier System to Acoustic Excitation in a Gas Turbine Nuclear Reactor (81-GT-16) (A) **Je 105**

Nuclear Safety
Safety-Minded Swedes (ES) **F 23**

Nuclear Simulator
A Swedish-American Offering (ES) **Jl 18**

Nuclear Technology
More Nuclear Views (C) **Mr 66**

Nuclear Technology Centers
Servicing the Nuclear Customer (ES) **Ag 20**

Nuclear Views
More Nuclear Views (C) **Mr 66**

Nuclear War
Doomsday + 1 (BTR) **Mr 68**

Nuclear Waste
How Can We Prevent Nuclear Sabotage? (C) **D 56**

Nuclear Waste Disposal
Nature's Garbage Disposal? (C) **Ap 56**

Nuclear Waste Problem
Nuclear's Record (C) **Mr 66**

Nuclear Weapons
Engineers and Nuclear Weapons (C) **O 50**
Reminiscences of Los Alamos, 1943-1945 (Studies in the History of Modern Science 5) (CB) **Jl 93**

Nuclear World
More Nuclear Views (C) **Mr 66**

Nucleating Flow
Nonequilibrium Streamline Curvature Throughflow Calculations in Wet Steam Turbines (81-Gr/GT-3) (A) **O 101**

Numerical Control
Robots and Manipulators **N 42**

Numerical Method
A Simple Numerical Method for the Kinematic Analysis of Spatial Mechanisms (80-DET-23) (A) **F 120**

Numerical Solution
A Numerical Solution of the Thermal Elastohydrodynamic Lubrication in an Elliptical Contact (81-Lub-29) (A) **D 97**

Nuspl, S. P. Power Plant Noise Control (81-JPGC-Pwr-15) (A) **N 111**

Nutrients
Sewage as Nutrient (BTR) **O 57**
Treatment of CELSS and PCELSS Waste to Produce Nutrients for Plant Growth (81-ENAs-19) (A) **O 100**

Nuts
The Split Nut: An Easy to Fit Nut with a Higher Inherent Strength (80-WA/DE-6) (A) **Ap 98**

Nypan, L. J. Roller Skewing Behavior in Roller Bearings (81-Lub-45) (A) **D 99**

O

Oba, R. Supercavitating Cavity Observations by Means of Laser Velocimeter (80-WA/FE-5) (A) **My 85**

Oberg, E. *(author)* Machinery's Handbook, Revised 21st Ed. (CB) **N 115**

O'Brien, J. *(editor)* Gas Turbines for Automotive Use (CB) **S 90**

O'Brien, K. C. Retrofitting Utility Power Plants for Cogeneration Using Crossover Pressure Control (81-JPGC-Pwr-33) (A) **D 33**

O'Brien, R. A. Elections to Fellow Grade **Je 102**

O'Brien, W. F., Jr. A Model for Dynamic Loss Response in Axial-Flow Compressors (81-GT-154) (A) **Jl 86**

Obstructed Views
Computation of Radiation View Factors for Surfaces with Obstructed Views of Each Other (81-HT-57) (A) **O 98**

Occhipinti, V. M. The Application of Computer Technology to Distribution (80-WA/MH-14) (A) **Ap 97**

Ocean Currents
Climate Clues from Ocean Depths (BTR) **My 47**

Ocean Drilling
NSF Forms Ocean Drilling Office (NB) **D 78**

Ocean Energy
Marine Sources of Energy (CB) **D 102**
Ocean Energy: Meeting the National Energy Goals (NR) **Ap 78**

Ocean Engineering
Assessment of Thermal Protection Afforded by Hot Water Diving Suits (80-WA/OCE-4) (A) **Mr 117**
At-Sea Evaluation of a Ram Tensioner for Ocean Deployment and Recovery (80-WA/OCE-5) (A) **Ap 97**
Axial Response of Oval Wire Ropes (80-WA/OCE-3) (A) **Ap 97**
Data Acquisition System for Thermal Stress Studies (80-WA/OCE-14) (A) **Ap 98**
Development, Testing and Field Use of a Specialty Electro-Mechanical, Contra-Helical Steel Strength Member Cable (80-WA/OCE-7) (A) **Ap 97**
An Electro-Optical Array Support Cable (80-WA/OCE-8) (A) **Ap 97**
Fiber Optic Cables in the Ocean Environment (80-WA/OCE-6) (A) **Mr 118**
Long Coring Facility Winch and Cable System (80-WA/OCE-9) (A) **Ap 98**
Moored Systems Designed to Sense Deep Ocean Earthquakes (80-WA/OCE-10) (A) **Ap 98**
The Motion Compensation Deck Handling System for the Remote Unmanned Work Systems (80-WA/OCE-11) (A) **Ap 97**
Performance Evaluation of Buoy Shapes for Deep Ocean Systems (80-WA/OCE-12) (A) **Ap 97**
The Reduction of Capstan Effectiveness by Cable Bending Resistance (80-WA/OCE-2) (A) **Mr 118**
A Ten-Zone Thermal Manikin for Evaluating Personnel Protective Garments in Cold Air and Water Immersion Environments (80-WA/OCE-13) (A) **Mr 118**
Torque and Stress Balanced Design of Helically Armored Cables (80-WA/OCE-1) (A) **Mr 118**

Ocean Environment
Fiber Optic Cables in the Ocean Environment (80-WA/OCE-6) (A) **Mr 118**
The Uncertainties of OTEC (ES) **Mr 37**

Ocean Mining
1981 Offshore Technology Conference, review (NR) **Ag 57**
Undersea Work Systems (Ocean Engineering Series, Vol. 1) (CB) **Ag 85**

Ocean Thermal Energy Conversion
Optimistic OTEC Outlook (C) **Je 62**

Ocean Vessels
Catamaran Caters to Divers (BTR) **Ap 61**

Ocean Water
Moles at Work (ES) **O 27**

Octane
Octane-Booster Optimism (ES) **Ap 29**

Ocular Screening System
Eye Care Space Spinoff (BTR) **F 51**

O'DHanley, T. Freezing Potential Studies in Wet Clay Systems (80-WA/HT-8) (A) **Ap 103**

O'Donnell, W. J. Plastic Strain Concentrations in Perforated Structures Subjected to Alternating Loads (81-PVP-22) (A) **Ag 80**

Offner, D. H. Analysis of the Double Link Reverser (80-DET-2) (A) **F 118**

Offset Segments
Dynamic Analysis of Rocking Journal Bearings with Multiple Offset Segments (81-Lub-34) (A) **D 98**

Offshore Oil
Recovering Offshore Oil, Gas (BTR) **S 54**
Undersea Work Systems (Ocean Engineering Series, Vol. 1) (CB) **Ag 85**

Offshore Resource Development
1981 Offshore Technology Conference, preview (NR) **Mr 80**

Offshore Structures
Assessment of Linear Spectral Analysis Method for Offshore Structures Via Random Sea Simulation (81-Pet-9) (A) **My 89**
The Determination of Modal Damping Ratios from

Maximum Entropy Spectral Estimates (80-WA/DSC-29) (A) **Mr 116**
The Inertial Pressure Concept (81-Pet-28) (A) **My 91**
Offshore Technology
1981 Offshore Technology Conference, review (NR) **Ag 57**
Offshore Wind Sites
Smooth Sailing (IF) **Mr 77**
Offshore Wind Systems
Offshore Wind Economics (C) **My 43**
Ogg, J. S. Pattern Factor Improvements in the F-100 Primary Combustion System (81-GT-25) (A) **Je 105**
Oh, S. Y. Control of Force Distribution in Robotic Mechanisms Containing Closed Kinematic Chains (80-WA/DSC-32) (A) **Mr 116**
Ohashi, K. Optimum Process Design for a Single-Stage Multifunctional Production System (80-WA/Prod-19) (A) **My 83**
Ohayon, G. A Method for the Calculation of the Wall Layers Inside the Passage of a Compressor Cascade With and Without Tip Clearance (81-GT-168) (A) **Jl 87**
Ohnsorg, R. W. Fabrication of Injection Molded Sintered Alpha SiC Turbine Components (81-GT-161) (A) **Jl 86**
Ohwovoriole, M. S. An Extension of Screw Theory (80-DET-20) (A) **F 119**
Oil Cleanliness
Effects of Ultra-Clean and Centrifugal Filtration on Rolling-Element Bearing Life (81-Lub-35) (A) **D 97**
Oil Drilling
Oil Drilling Tubes (IF) **O 64**
Oil-Film Coefficients
Frequency-Domain Estimation of Linearized Oil-Film Coefficients (81-Lub-7) (A) **D 96**
Oil Film Thickness
Measurement of Oil Film Thickness for Application to Elastomeric Stirling Engine Rod Seals (81-Lub-9) (A) **D 96**
A Study on Thermal Behavior of Large Seal-Ring (81-Lub-27) (A) **D 97**
Oil Mist
Large-Scale Application of Pure Oil Mist Lubrication **My 30**
Oil-Polymer Mixture
Energy-Saving Motor Oil (BTR) **S 52**
Oil Recovery
Design of Cabon Dioxide Pipelines (81-Pet-34) (A) **My 91**
Well Test Analysis for Enhanced Oil Recovery Projects (81-Pet-31) (A) **My 90**
Oil Sand Fragments
An Analytical Examination of the Behavior of Oil Sand Fragments in Heated Streams (80-WA/HT-33) (A) **Ap 105**
Oil Shale
Commercializing the Nonconventional (ES) **F 23**
In Situ Recovery of Shale Oil (BTR) **O 55**
Moroccan Shale, U.S. Technology (ES) **Jl 18**
An Oil Shale Scenario (ES) **Mr 37**
Oil Slicks
Fate and Threat of Oil Slicks in the Arabian Gulf (81-ENAs-10) (A) **Mr 111**
Oil Spills
Oil Spill Cleanup and Protection Techniques for Shorelines and Marshlands. (Pollution Technology Review, No. 78) (CB) **N 116**
Oil Spill Countermeasures for Canada's Ice-Infested Waters (81-Pet-24) (A) **My 90**
Oilfields
Oil Recovery in the Arctic (ES) **F 23**
Oishi, N. A Study on Thermal Behavior of Large Seal-Ring (81-Lub-27) (A) **D 97**
Okapuu, U. A Mean Line Prediction Method for Axial Flow Turbine Efficiency (81-GT-58) (A) **Je 109**
Oklishi, T. H. Measurement and Analysis of Total-Pressure Unsteadiness Data from a Axial-Flow Compressor Stage (81-Gr/GT-2) (A) **O 102**
Oladiran, O. B. An Interactive Computer Program for Force System Structural and Dimensional Synthesis (80-DET-61) (A) **Mr 107**
Old Equipment
Upgrading Old Generators (BTR) **Je 65**
Old Graue Mill
ASME Landmarks Program (NR) **N 87**
Old Industrial Sites
The Batsford Guide to the Industrial Archaeology of East Anglia: Cambridgeshire, Essex, Norfolk, Suffolk (CB) **Mr 119**
O'Leary, J. R. A Computer Simulation of a True Position Feature Pattern Gauge (81-DE-9) (A) **Ag 78**
Oliker, I. Utilization of Gas Turbine for District Heating Applications (81-GT-124) (A) **Jl 91**
Olson, B. A. Effects of Vitiation on Axial Catalyst Bed Temperature Profiles (81-GT-141) (A) **Jl 84**
Olson, W. S. 11.5 Micron Emission from Smoke Computed Using Finite Cloud Geometry (80-WA/HT-1) (A) **Ap 103**
Olszowski, S. T. Roughness Characteristics of Plane Surfaces Based on Velocity Similarity Laws (81-FE-34) (A) **S 83**
O'Massey, R. C. Longitudinal Instabilty in Braked Landing Gear (80-WA/DSC-12) (A) **Mr 115**
On-Orbit Replacement
Maintainable Maintenance Disconnect Valve (MMDV) for On-Orbit Component Replacement (80-ENAs-42) (A) **Mr 114**
On-the-Job Training
Utility Cadet Program (EN) **Ap 83**
Onisko, B. L. Wet Oxidation as a Waste Treatment in Closed Systems (81-ENAs-22) (A) **O 100**
Onset
Theoretical Prediction of Onset of Horizontal Slug Flow (80-WA/FE-6) (A) **My 85**
Opaque Materials
Particles with a Track Record (BTR) **Jl 56**
Open Channel Flow
The Effects of Bed Friction on Lateral Mixing in Open Channel Flow (81-FE-9) (A) **S 81**
Open Forums
Opinion on Opinion Pages (C) **Ap 56**
Openshaw, F. HTGR-GT and Electrical Load Integrated Control (80-WA/DSC-25) (A) **Mr 116**
Operation Factors
Effect of Turbine Design and Operation Factors on Plant Heat Rate (81-JPGC-Pwr-36) (A) **D 93**
Operational Safety
Operational Safety at the FFTF (81-JPGC-NE-6) (A) **N 109**
Operational Safety and Reliabilty Research at EBR-II (81-JPGC-NE-11) (A) **N 110**
Operator Shortage
Best Bargain Around: Engineers (C) **S 49**
Opinions
Opinion on Opinion Pages (C) **Ap 56**
Optical Fibers
Fiber Optic Cables in the Ocean Environment (80-WA/OCE-6) (A) **Mr 118**
Fiber-Optic, Semiconductor Temperature Gage (BTR) **N 76**
Hot Spot Detection in Generators with Optical Fibers (81-JPGC-Pwr-18) (A) **N 112**
Optic Fiber Screwdriver (IF) **Mr 77**
Optical Interference
Finite Element Embedding with Optical Interference (81-HT-65) (A) **O 97**
Optical Interferometer
Interferometer Accurately Measures Rotation Angle (BTR) **N 77**
Optical Interferometry
The Effects of Artificially-Produced Defects on the Film Thickness Distribution in Sliding EHD Point Contacts (81-Lub-46) (A) **D 98**
Optical Pulse
Shortest Optical Pulse (BTR) **S 53**
Optical Pyrometry
Turbine Pyrometry—An Equipment Manufacturer's View (81-GT-136) (A) **Jl 85**
Optimal Aim Strategy
Control of Bilinear System with an Optimal Aim Strategy (80-WA/DSC-43) (A) **Mr 117**
Optimal Shape Design
Optimal Shape Design of Turbine Blades (81-DET-128) (A) **N 108**
Optimal State Estimation
Linear Optimal Estimation of Discrete Bilinear Systems (80-WA/DSC-14) (A) **Mr 115**
Optimal System Designs
Decision Making Support in the Assessment of Modular Radiator Systems (81-ENAs-11) (A) **Mr 111**
Optimization
Effect of Surface Ellipticity on Dynamically Loaded Cylindrical Bearings (81-Lub-1) (A) **D 96**
Optimization Design
Optimization Design Considerations for Cogeneration Plants (81-JPGC-GT-7) (A) **D 95**
Optimization Problems
The Optimization Problem with Optimal Tolerance Assignment and Full Acceptance (80-DET-47) (A) **F 121**
Optimization Programs
Elements of an Optimization Software Library for Engineering Design (80-WA/DSC-41) (A) **Mr 117**
Optimization Technique
Principles of a Heuristic Optimization Technique as an Aid In Design—An Overview (80-DET-44) (A) **F 121**
Optimum Availability Level
Utility Experience with an Availability Improvement Program: Status and Current Direction (80-JPGC/Pwr-18) (A) **F 117**
Optimum Design
Optimization of Cam-Follower Systems with Kinematic and Dynamic Constraints (80-DET-11) (A) **F 118**
Optimization of High Speed Geneva Mechanisms (80-DET-56) (A) **Mr 107**
Optimum Process Design
Optimum Process Design for a Single-Stage Multifunctional Production System (80-WA/Prod-19) (A) **My 83**
Optimum Synthesis
Optimum Stochastic Synthesis of Four-Bar Spatial Function Generators (80-DET-32) (A) **F 120**
Optimum Synthesis of Multi-Loop Planar Mechanisms Via the Linear Partition of Design Equations (Method of No Misconceptions) (80-DET-1) (A) **F 118**
Optoelectronic Chips
An Optoelectronic Chip (BTR) **D 59**
Oranratnachai, A. Approximate Description of Crack Kinking and Curving (81-APM-22) (A) **S 85**
Orbaugh, J. On Determining Right and Wrong (C) **O 51**
Orbital Flight
Shuttle Astronauts Honored at White House (NR) **Jl 70**
Orbital Payloads
EVA Equipment for Satellite Service **Je 40**
Orbital Transfer
Space Transportation Systems (AIAA Aerospace Assessment Series, Vol. 1) (CB) **Ja 104**
Orbiter Missions
Lightside Atmospheric Revitalization System for Space Shuttle Orbiter (81-ENAs-26) (A) **S 87**
Ordermatic
Order Selection of Full and Broken Case Goods (80-WA/MH-12) (A) **Ap 97**
Ordubadi, A. Use of Cepstra in Acoustical Signal Analysis (81-DET-138) (A) **D 92**
Organizational Communication
The Corporate Rap Session: An Employee Perspective **D 83**
Orifice Coefficient Equation
Praise for Perspective (C) **O 50**
Orin, D. E. Control of Force Distribution in Robotic Mechanisms Containing Closed Kinematic Chains (80-WA/DSC-32) (A) **Mr 116**
Orlandea, N. Dynamic Continuous Path Synthesis of Industrial Robots Using ADAMS Computer Program (80-DET-41) (A) **F 121**
Orsino, A. J. MS9001E—A New 100-MW Gas Turbine (81-GT-31) (A) **Je 106**
Ortega, J. K. E. Radiation and Free Convection Shield for Passive Thermal Control (80-WA/Sol-7) (A) **Ap 93**
Orthogonal Machining
The Hammer QSD-Quick Stop Device for High-Speed Machining and Rubbing (80-WA/Prod-13) (A) **My 82**
Tool-Chip Contact Length in Orthogonal Machining (80-WA/Prod-23) (A) **My 83**
Orthotropic Elastic Plates
On Torsion and Transverse Flexure of Orthotropic Elastic Plates (80-WA/APM-16) (A) **Ja 100**
Ortloff, J. E. A High-Pressure Swivel for Natural Gas

Service and Oscillating Motion in a Marine Environment (81-Pet-19) (A) **My 90**

Oscillating Squeeze Films
The Thermal Behavior of Oscillating Squeeze Films (81-Lub-26) (A) **D 97**

Oscillations
Interactions Between Dynamic Normal and Frictional Forces During Unlubricated Sliding (81-Lub-15) (A) **D 97**

Oscillators
Stability Boundary for Pseudo-Random Parametric Excitation of a Linear Oscillator (81-DET-15) (A) **D 88**

Oscillatory Motion
Effects of Amplitude of Oscillation on the Wear of Dry Bearings Containing PTFE (81-Lub-6) (A) **D 96**

Osgerby, I. T. Effects of Vitiation on Axial Catalyst Bed Temperature Profiles (81-GT-141) (A) **JI 84**

Oshima, M. An Experiment on Pump Pressure Fluctuation, Vibration and Air Borne Noise Caused by Cavitation (81-DET-94) (A) **N 106**

Osman, M. O. M. An Approach for Dynamic Analysis of Mechanical Systems with Multiple Clearances Using Lagrangian Mechanics (81-DET-3) (A) **O 102**; On the Dynamic Gear Tooth Loading as Affected by Bearing Clearances in High-Speed Machinery (81-DET-112) (A) **D 91**; Finite Journal Bearing with Nonlinear Stiffness and Damping. Part 1: Improved Mathematical Models (81-DET-51) (A) **D 89**; Part 2: Stability Analysis (81-DET-52) (A) **N 105**; General Gear Diameter Equations for the Synthesis of Multi-Speed Gear Trains (81-DET-117) (A) **D 92**; On the Prediction of Journal-Bearing Separation in High Speed Mechanisms with Clearances (80-WA/DSC-36) (A) **Mr 117**

Ostergaard, P. B. Industrial Noise Pollution—Part 1: The Nature and Extent of the Problem **JI 34**

Ostiguy, G. L. Influence of the Aspect Ratio on the Dynamic Stability and Nonlinear Response of Rectangular Plates (81-DET-62) (A) **D 89**

Osuagwu, C. C. Effect of Inter-Modulation and Quasi-Periodic Instability in the Diagnosis of Rolling Element Incipient Defect (81-DET-11) (A) **N 104**

OTEC Plants
The Uncertainties of OTEC (ES) **Mr 37**

Othmer, D. F. Methanol—The Efficient Conversion of Valueless Fuels into a Versatile Fuel and Chemical Feedstock (81-PID-1) (A) **My 86**

Otoguro, Y. Embrittlement of 1¼ Cr-½ Mo Steels in High-Temperature Service (81-Mat-3) (A) **O 102**

Otts, J. V. Operational Characterization of the Solar-Thermal Power System Near Willard, N. M. (80-WA/Sol-39) (A) **Ap 95**

Outboard Motors
ASME Landmarks Program (NR) **N 88**

Outdated Teaching Equipment
Report Shows Decline in Quality of Engineering Education (EN) **Ja 72**

Outer Rings
Parametric Design Analysis of a Hybrid Composite Flywheel Using a Laminated Central Disc and a Filament Wound Outer Ring (80-DET-97) (A) **Mr 110**

Outer Space
'HEL' in Outer Space (BTR) **JI 49**
The Push to Civilize Outer (NR) **O 66**

Output-Input Derivatives
Analytical Synthesis of Four-Bar Function Generators to Match Prescribed Differential Coefficients (80-DET-33) (A) **F 120**

Oval Wire Ropes
Axial Response of Oval Wire Ropes (80-WA/OCE-3) (A) **Ap 97**

Overby, C. Expanded Socio-Technical Outlook Urged (C) **Ap 55**; Zwiep's Important Message (C) **Ap 54**

Overplanning
The Importance of a Corporate Value System **N 89**

Overseas Workers
Taxing Americans Overseas (WW) **JI 76**

Overton, R. L. Evaluation of a Proposed Modification of the F-Chart Method to Include Collector Array Air Leakage (80-WA/Sol-12) (A) **Ap 93**

Owen, J. W. Active Thermal Control for an Advanced Power Platform (81-ENAs-31) (A) **S 87**

Oxide Inhibition
The Use of Nickel and Cobalt Catalysts in a Bosch Reactor (80-ENAs-15) (A) **Mr 111**

Oxides
Acid Rain Studies (BTR) **Ap 58**

Oxygen Generation Subsystem
Oxygen Generation Subsystem for Spacecraft (81-ENAs-40) (A) **S 88**

Ozawa, K. Design Method to Improve the Performance of Two-Dimensional Motion Control (81-DET-120) (A) **N 108**

Ozguven, H. N. Modal Analysis of Non-Proportionally Damped Mechanical Structures (81-DET-75) (A) **O 105**

P

Packed-Bed Converters
The Effect of Flow Maldistribution on the Thermal Response of Packed-Bed Converters and Thermal-Energy Storage Units (81-HT-59) (A) **O 98**

Padar, F. NO_x Reduction on Large Bore SI Engines Using Catalytic Converters (81-DGP-9) (A) **My 86**

Padovan, J. Engine Dynamic Analysis With General Nonlinear Finite-Element Codes—Part 1: Overall Approach and Development of Bearing Damper Element (81-GT-151) (A) **JI 85**

Pagni, P. J. Soot Volume Fraction Profiles in a Free Combusting Boundary Layer (81-HT-1) (A) **S 88**

Pai, D. H. Elections to Fellow Grade **S 78**

Paidoussis, M. P. Fluidelastic Instability of an Infinite Double Row of Circular Cylinders Subject to a Uniform Crossflow (81-DET-24) (A) **D 89**; Parametric Resonance Oscillations of Flexible Slender Cylinders in Harmonically Perturbed Axial Flow—Part 1: Theory (80-WA/APM-30) (A) **Ja 101**; Part 2: Experiments (80-WA/APM-31) (A) **Ja 102**

Palaszewski, S. J. A Three-Dimensional Air-Vapor-Droplet Local Interaction Model for Spray Units (81-HT-18) (A) **O 94**

Palazotto, A. N. Dynamic Analysis of High Speed Rocket Sleds (81-DET-42) (A) **O 104**

Pallets
On Pallet Mounted Deployable Radiator Systems (81-ENAs-29) (A) **S 88**

Pam, R. L. Recent Pilot-Scale Development of a Low-NO_x, "Air-on-Wall" Corner-Fired Combustion System (81-JPGC-APC-4) (A) **D 100**

Pampreen, R. C. A Blockage Model for Centrifugal Compressor Impellers (81-GT-11) (A) **Je 105**

Pan, C. H. T. Dynamic Analysis of Rupture in Thin Fluid Films. 1—A Noninertial Theory (81-Lub-24) (A) **D 98**

Pan, Y. S. Coal-Oil Mixtures: A Near-Term Approach to Conserving Petroleum (81-Pet-22) (A) **My 90**

Pandey, P. C. Tooling Design for ECM—A Finite Element Approach (80-WA/Prod-9) (A) **My 82**

Pandit, S. M. A Data Dependent Systems Approach to Dynamics of Surface Generation in Turning (80-WA/Prod-25) (A) **My 83**

Pandya, J. M. Pressure Vessels: An Integrated Approach to Design, Analysis, and Manufacturing (81-DET-119) (A) **N 107**

Panek, C. A Thermomechanical Example of Auto-Oscillation (80-WA/APM-21) (A) **Ja 101**

Pao, Y.-H. Multiple Scattering of Waves in Irregularly Laminated Composites (80-WA/APM-22) (A) **Ja 102**; Propagation of Elastic Pulses and Acoustic Emission in a Plate—Part 1: Theory (81-APM-4) (A) **S 84**; Part 2: Epicentral Responses (81-APM-5) (A) **S 83**; Part 3: General Responses (81-APM-6) (A) **S 83**

Papailiu, K. D. A Method for the Calculation of the Wall Layers Inside the Passage of a Compressor Cascade With and Without Tip Clearance (81-GT-168) (A) **JI 87**

Papalambros, P. Monotonicity in Goal and Geometric Programming (80-DET-48) (A) **Mr 106**

Papell, S. S. Analysis for Predicting Adiabatic Wall Temperatures with Single Hole Coolant Injection into a Low Speed Crossflow (81-GT-91) (A) **Je 111**

Paper Pulps
An Update of Solid Waste Resource Recovery Technology: Improved Economics through Potential Penetration of New Markets for Recycled Products (80-ENAs-9) (A) **Mr 111**

Papermaking Fibers
Analysis of Heat and Mass Transfer Within a Sheet of Papermaking Fibers During Drying (81-HT-49) (A) **O 97**

Papiliou, K. D. Study of Secondary Flows in Blade Cascades of Turbomachines (81-Gr/GT-4) (A) **O 102**

Pepplewell, J. M. The Effect of Ammonia and Oxygen Levels on the Corrosion Characteristics and Copper Release Rates of Copper Base Condenser Tube Alloys Under Simulated Steam-Side Conditions (81-JPGC-Pwr-9) (A) **N 111**

Parabolic Dish Collectors
Small Gas Turbine with Large Parabolic Dish Collectors (81-GT-201) (A) **JI 90**

Parabolic Dishes
Thermal Storage Requirements for Parabolic Dish Solar Power Plants (80-WA/Sol-21) (A) **Ap 94**

Parabolic Profiles
Developing Region of Laminar Jets With Parabolic Exit Velocity Profiles (81-FE-3) (A) **Ag 82**

Parabolic-Trough Collectors
Frequency Response Analysis of Fluid Control Systems for Parabolic-Trough Solar Collectors (80-WA/Sol-15) (A) **Ap 93**

Paraho-Ute Facility
An Oil Shale Scenario (ES) **Mr 37**

Para-Hydrogen
Numerical Prediction of Wall Temperatures for Near-Critical Para-Hydrogen in Turbulent Upflow Inside Vertical Tubes (80-WA/HT-52) (A) **Ap 106**

Parallel Axes
Determination of Extreme Distances of a Robot Hand—Part 1, A General Theory (80-DET-57) (A) **Mr 107**; Part 2, Robot Arms with Special Geometry (80-DET-58) (A) **Mr 106**

Parallel Legs
Designing for Three Parallel ID Fan Operation (81-JPGC-Pwr-8) (A) **N 111**

Paralyzed Persons
Simian Servants (BTR) **JI 52**

Parameter Analysis
Technological Innovation in Education and Industry (CB) **F 128**

Parameter Monitoring
Gas Turbine Performance Deterioration and Water Wash Frequency (81-JPGC-GT-10) (A) **D 95**

Parametric Effects
Parametric Effects on Vapor Non-Equilibrium in Post-Dryout Heat Transfer (80-WA/HT-50) (A) **Ap 107**

Parametric Excitation
Stability Boundary for Pseudo-Random Parametric Excitation of a Linear Oscillator (81-DET-15) (A) **D 88**

Parametric Resonances
Parametric Resonance Oscillations of Flexible Slender Cylinders in Harmonically Perturbed Axial Flow—Part 1: Theory (80-WA/APM-30) (A) **Ja 101**

Parametric Study
A Parametric Study of Dynamic Response of a Discrete Mode of Turbomachinery Bladed Disk (81-DET-137) (A) **D 91**

Paraprofessionals
No Substitute for Knowledge (C) **D 56**

Park, Y. J. Cyclic Behavior of Class U Wheel Steel (80-WA/RT-9) (A) **F 126**

Parker, H. W. Engine Fuels from Biomass (81-DGP-4) (A) **My 87**

Parker, R. J. Endurance Tests with Large-Bore Tapered-Roller Bearings to 2.2 Million DN (81-Lub-56) (A) **D 100**

Parker, S. P. *(editor)* McGraw-Hill Encyclopedia of Energy, 2nd Ed. (CB) **My 93**

Parkes, J. B. Interim Report on Water Induction Detection Studies (81-JPGC-Pwr-27) (A) **N 113**

Parkin, M. W. Flow Instability Due to a Diameter Reduction of Limited Length in a Long Annular Passage (81-DET-26) (A) **N 104**

Parks, C. V. Thermal-Hydraulic Differential Sensitivity Theory (80-WA/HT-56) (A) **My 84**

Parmeshwar, K. MAPS-1: Computer-Aided Design System for Preliminary Material and Manufacturing Process Selection (80-DET-51) (A) **Mr 108**

Parness, M. A. Emissions from Gasoline and Diesel Delivery Trucks by Chassis Transient Cycle (81-DGP-6) (A) **My 87**

Parsapou, H. B. An Application of the Optical

Correlation Computer to the Detection of the Malkus Transitions in Free Convection (80-WA/HT-27) (A) **Ap 105**

Part Load Efficiency
IM 2000 Marine Gas Turbine-Design, Development and Testing (81-GT-196) (A) **Jl 89**

Partial Pressure
An Investigation of the Relationship Between Partial Pressure of SO_3 and the Corrosion Potential of In 738 in Na_2SO_4 Melts at 900°C (80-WA/CD-3) (A) **Ja 97**

Partial Rebreather
A Portable Oxygen Subsystem—Description and Preliminary Thermal Performance Prediction (80-ENAs-7) (A) **Mr 111**

Partially Autofrettaged Tube
Residual Stress Redistribution Caused by Notches and Cracks in a Partially Autofrettaged Tube (81-PVP-6) (A) **Ag 79**

Particle Trajectories
Improved Particle Trajectory Calculations Through Turbomachinery Affected by Coal Ash Particles (81-GT-53) (A) **Je 108**

Particles
Predicting Trajectories and Concentrations of Particles in a Grinding Booth (81-FE-23) (A) **S 82**

Particulate Bulk
Gentle Handling Methods for Fragile Particulate Bulk (80-WA/MH-1) (A) **Ap 96**

Particulate Emissions
Formation of SO_3 in Gas Turbines (81-GT-42) (A) **Je 106**

Particulate Sedimentation
An Application of Mixture Theory to Particulate Sedimentation (80-WA/APM-1) (A) **Ja 99**

Particulates
High Temperature Removal of Alkali and Particulates in Pressurized Gasification Systems (81-GT-67) (A) **Je 109**
Particulate Ingression Past Elastomeric Linear Motion Seals (81-DE-10) (A) **Ag 78**

Paschall, R. K. Development of a Self-Actuated Shutdown System (81-JPGC-NE-8) (A) **N 109**

Paschkis, V. Questions for Nuclear Advocates (C) **My 42**

Pasic, H. Dynamic Response of a Rectangular Plate with Initial Imperfections Under Large In-Plane Forces (81-DET-80) (A) **D 90**

Passenger Equipment
Progress in Railway Mechanical Engineering (1979-1980 Report of Survey Committee)—Cars and Equipment (80-WA/RT-11) (A) **F 126**

Passenger Trains
Fifty-Fourth Landmark—The Pioneer Zephyr (NR) **Ap 74**

Passenger Transportation
Gas Turbines for Automotive Use (CB) **S 90**

Passenger Trucks
Stability and Curving Mechanics of Rail Vehicles (80-WA/DSC-15) (A) **Mr 115**

Passive Graphics
Historical Highlights of Interactive Computer Graphics **N 32**

Passive Solar Energy
Passive Solar Energy Education Center (EN) **Je 92**

Passive Thermal Control
Radiation and Free Convection Shield for Passive Thermal Control (80-WA/Sol-7) (A) **Ap 93**

Pastore, A. Development of Multi-Bar Weft-Insert Warp Knit Glass Fabrics for Industrial Applications (80-Tex-7) (A) **F 123**

Patankar, S. V. Flow Prediction in Rotating Ducts Using Coriolis-Modified Turbulence Models (80-WA/FE-1) (A) **My 85**

PATE Program
The Navy PATE Program (81-GT-189) (A) **Jl 88**

Patents
Law to Help Close the Patent Gap (NR) **Jl 70**
Patents Commissioner Promises Operations Overhaul (NR) **N 91**

Path Generation
Synthesis of an Epicyclic Gear Train for Path-Generation (80-DET-27) (A) **F 119**

Path Planning
Optimum Path Planning for Mechanical Manipulators (80-WA/DSC-18) (A) **Mr 115**

Patrick, J. P. Air Supply System Bite for Boeing 767 Airplane (81-ENAs-7) (A) **S 86**

Patrol Community
Anti-Exposure Suits in the VP Community (80-ENAs-43) (A) **Mr 113**

Patten, A. J. Dynamic Evaluation of a Nuclear Main Steam Isolation Valve Actuator (81-DET-32) (A) **O 104**

Pattern Gauge
A Computer Simulation of a True Position Feature Pattern Gauge (81-DE-9) (A) **Ag 78**

Pattern Improvements
Pattern Factor Improvement in the F-100 Primary Combustion System (81-GT-25) (A) **Je 105**

Patterson, R. W. Elections to Fellow Grade **Jl 82**

Patterson, W. N. Computer Design of Pneumatic Rock Drills and Mufflers (81-DET-99) (A) **D 91**

Patti, F. J. Heat Exchanger Applications During TMI-2 Post-Accident Cooldown (81- JPGC-NE-9) (A) **N 110**

Patwardhan, A. G. Motion Simulation of an Articulated Robotic Arm Subjected to Static Forces (80-DET-102) (A) **Mr 110**

Paul, D. B. Results of a Government and Industry Survey of the Heating Methods Used to Determine Missile Structural Temperatures (80-ENAs-26) (A) **Mr 112**

Pay Survey
Industrial Engineering Pay Survey (NB) **Jl 80**

Paychecks
Paychecks Lose Power (NB) **Mr 81**

Payloads
Thermal Accommodation Techniques for Payloads On-Board Spacelab (80-ENAs-20) (A) **Mr 112**
Thermal Control Subsystem Definition for Science and Application Platform (81-ENAs-30) (A) **S 87**

Peak Loads
Batteries for Peak Loads (ES) **Ja 21**

Peak Overloads
Role of Induction Driving Motor in Transmission Dynamics (80-DET-96) (A) **Mr 110**

Peake, W. Predictions of Drop Models for the Dispersed Flow Downstream of the Quench Front in Tube Reflood Experiments (80-WA/HT-47) (A) **Ap 106**

Pearson, J. T. Parametric Analysis of Louvered Air-Heating Solar Collectors (80-WA/Sol-38) (A) **Ap 95**

Peat
At the JPGC: Environmentally Safe Energy Production (NR) **D 68**
The Potential for Use of Peat Blends with Coal for Electric Power Generation (81-JPGC-Fu-2) (A) **D 93**
Power from Peat: Irish Practice and Cost Data (81-JPGC-Fu-6) (A) **D 94**

Pedal-Powered Aircraft
MacCready Inducted into Inventors Hall of Fame (NB) **Mr 81**

Peeken, H. The Toroidal Drive **F 32**

Peetgren, M. L. High Temperature Solar Thermal Technology (80-WA/Sol-20) (A) **Ap 94**

Pei-qing, H. Development of the Self-Temperature Compensated Resistance Strain Gage Used up to 700°C (81-GT-118) (A) **Je 113**

Peksu, O. A. Analysis of Plate Vibrations Using Superelements (81-DET-65) (A) **N 106**

Pellet Fuel
Low-Btu Gas From an Environmentally Clean Pellet Fuel (80-WA/Fu-2) (A) **F 126**

Peltzer, R. D. The Effects of Roughness and Shear on Vortex Shedding Cell Lengths Behind a Circular Cylinder (81-FE-24) (A) **S 82**

Pen Plotter
High-Performance Large-Format Pen Plotter (BTR) **F 53**

Peng, C. S. P. Analysis and Design of Hybrid Double-Absorption Cooling Systems for Low Grade Thermal Energy Applications (80-WA/HT-44) (A) **Ap 106**

Penichet, F. M. How Can We Prevent Nuclear Sabotage? (C) **D 58**; Nuclear Power: The Human Element (C) **Ap 56**

Penney, W. H. Operating Experience of the EBR-II Steam Generating System (81-JPGC-NE-4) (A) **N 110**

Pennock, G. R. Stress Fluctuation on High Speed Mechanisms (80-DET-21) (A) **F 119**

Pennsylvania Railroad
Electric Traction on the Pennsylvania Railroad, 1895-1968 (CB) **My 92**

Penny-Shaped Crack
Stress Analysis of a Penny-Shaped Crack Located Between Two Spherical Cavities in an Infinite Solid (80-WA/APM-12) (A) **Ja 100**

Peptides
The Revolution in Neurochemistry (BTR) **O 53**

Perdichizzi, A. Efficiency Prediction for Axial-Flow Turbines Operating With Nonconventional Fluids (81-GT-15) (A) **Je 105**

Perfection
Storm Over S-T View (C) **Ja 51**

Perforated Structures
Plastic Strain Concentrations in Perforated Structures Subjected to Alternating Loads (81-PVP-22) (A) **Ag 80**

Performance Criteria
Optimization of Cam-Follower Systems with Kinematic and Dynamic Constraints (80-DET-11) (A) **F 118**

Performance Test Codes
Alternative Energy Technologies and Their Impact on Performance Test Codes (80-WA/PTC-2) (A) **Ap 101**

Peri, M. Dynamic Crack Propagation Analysis of the SEN Specimen by a Numerical Method (80-WA/PVP-2) (A) **Ja 97**

Peripheral Printers
Self-Conjugate Cam Design for a High-Speed Low-Cost Indexing Mechanism (80-DET-14) (A) **F 119**

Perishable Commodities
Dormavac—Long-Term Storage of Perishable Commodities (80-ENAs-1) (A) **Mr 111**

Perl, M. An Analysis of, and Some Observations on, Dynamic Fracture in an Impact Test Specimen (81-PVP-18) (A) **Ag 80**; Ductile Axial Crack Extension in Pipes (80-WA/PVP-5) (A) **Ja 98**; Dynamic Crack Propagation in Very Ductile Materials—The Influence of Inertia (80-WA/PVP-8) (A) **Ja 98**

Perlsweig, M. Hot Gas Cleanup Program for Pressurized Fluidized Bed Combustor Combined Cycle Power Generation (81-JPGC-GT-5) (A) **D 95**

Personal Equipment
Personal Equipment Development for Use in Underground Mining (81-ENAs-48) (A) **O 101**

Perturbed Tracks
Designing Perturbed Test Tracks for Evaluating Rail Vehicle Dynamic Performance (81-RT-7) (A) **Ag 76**

Perugi, A. H. Elections to Fellow Grade **Jl 82**

Peschka, W. Liquid Hydrogen for Automotive Vehicles—Experimental Results (81-HT-83) (A) **O 99**

Pestanas, V. V. Qualification of Induction Heating Stress Improvement for Mitigation of Stress Corrosion Cracking (81-PVP-13) (A) **Ag 79**

Peters, L. C. Some Engineering Criteria for Determining Design Defects (80-WA/DE-16) (A) **Ap 101**

Peters, W. An LNG Carrier Adjustable Speed Gas Turbine Electric Propulsion System (81-GT-112) (A) **Je 113**

Peterson, G. R. Unconventional Processes for Food Regeneration in Space: An Overview (81-ENAs-35) (A) **S 87**

Peterson, J. Type and Dimensional Synthesis of Casement Window Mechanisms (80-DET-78) (A) **Mr 108**

Peterson, J. H. Train Brake and Track Capacity Requirements for the 80s (81-RT-11) (A) **Ag 76**

Peterson, R. R. Gas Turbine Materials Evaluation Program Utilizing Coal Derived Gaseous Fuel (81-GT-65) (A) **Je 109**

Petrie, G. L. Performance Evaluation of Buoy Shapes for Deep Ocean Systems (80-WA/OCE-12) (A) **Ap 97**

Petrochemical Plants
Large-Scale Application of Pure Oil Mist Lubrication **My 30**

Petroleum
Anthracite Vs Bituminous Coal Gasification (81-Pet-23) (A) **My 90**
Application of Production Systems Analysis to Determine Completion Sensitivity on Gas Well Production (81-Pet-13) (A) **My 89**
Application of Systems Analysis Techniques in Op-

timizing Gas Lift Installations (81-Pet-33) (A) My 91
ASME Petroleum Conference, preview (NR) Jl 70
Assessment of Bit Life Under Conditions of Rotary-Vibratory Drilling (81-Pet-15) (A) My 89
Assessment of Linear Spectral Analysis Method for Offshore Structures Via Random Sea Simulation (81-Pet-9) (A) My 89
The Coal Fired Producer Gas (CFPG) Engine—An Alternative for Power and Propulsion in the 80's (81-Pet-17) (A) My 90
Coal-Oil Mixtures: A Near-Term Approach to Conserving Petroleum (81-Pet-22) (A) My 90
Contingency Planning for Liquid Pipeline Spills (81-Pet-12) (A) My 89
Design of Carbon Dioxide Pipelines (81-Pet-34) (A) My 91
Development of an Instrumented Marine Riser Joint (81-Pet-25) (A) My 90
Drilling and Completing Multiple Branched Boreholes for In Situ Leach Mining (81-Pet-2) (A) My 88
The Dynamics of Tension Leg Platforms in Waves (81-Pet-27) (A) My 90
Evaluation of Concepts for Controlling Exhaust Emissions from Minimally Processed Petroleum and Synthetic Fuels (81-GT-157) (A) Jl 86
Feasibility Study for the Use of Geothermal Energy at a Leggs' Hosiery Plant in New Mexico (81-Pet-8) (A) My 89
Fracture Mechanics Model for Pittsburgh Coal (81-Pet-16) (A) My 90
Gas-Turbine-Topped Hybrid Power Plants for the Utilization of Geopressured Geothermal Resources (81-Pet-5) (A) My 88
Hard-Surface Drill String Stabilizer Design Concept to Accommodate Washover Operations (81-Pet-4) (A) My 88
A High-Pressure Swivel for Natural Gas Service and Oscillating Motion in a Marine Environment (81-Pet-19) (A) My 90
Hydraulic Borehole Mining (81-Pet-6) (A) My 89
The Inertial Pressure Concept (81-Pet-26) (A) My 91
Linear Prediction Theory for Digital Simulation of Sea Waves (81-Pet-7) (A) My 89
Liquid Custody Transfer Measurement Can be Accurate (81-Pet-26) (A) My 90
Making Windpower an Important Part of a National Energy Plan (81-Pet-11) (A) My 89
Mining Without Men Going Underground (81-Pet-21) (A) My 90
Mud Pulse Tachometer for Downhole Drilling Motors (81-Pet-3) (A) My 88
The Natural Frequencies and Mode Shapes of Cables with Attached Masses (81-Pet-10) (A) My 89
Oil Spill Countermeasures for Canada's Ice-Infested Waters (81-Pet-24) (A) My 90
Petroleum and Hard Minerals from the Sea (CB) N 115
Pipelining Gas from the Canadian High Arctic (81-Pet-20) (A) My 90
Pressure Behavior During Polymer Flow in Petroleum Reservoirs (81-Pet-32) (A) My 91
Specifying Linepipe Suitable for Safe Operation in Sour Wet Service (81-Pet-1) (A) My 88
Technical Considerations in Drainhole Drilling (81-Pet-14) (A) My 90
Tow Techniques for Marine Pipeline Installation (81-Pet-30) (A) My 90
Vibrations of Long Marine Pipes Due to Vortex Shedding (81-Pet-29) (A) My 91
Well Test Analysis for Enhanced Oil Recovery Projects (81-Pet-31) (A) My 90
Wellbore Flow Characteristics for Optimal Energy Recovery from Gulf Coast Geopressured Geothermal Sources (81-Pet-18) (A) My 90

Petroleum Engineering
Employers Scrambling for Engineering Graduates (EN) O 84
Starting Salary Offers (EN) Je 91

Petroleum Refinery
Cold Spring in an Existing Refinery (81-PVP-1) (A) Ag 79

Petroleum Reservoirs
Pressure Behavior During Polymer Flow in Petroleum Reservoirs (81-Pet-32) (A) My 91

Petroleum Technology
1981 Offshore Technology Conference, preview (NR) Mr 80

Perturbation Method
Stability Considerations in Thermoelastic Contact (80-WA/APM-25) (A) Je 102

Pfeiffer, R. Experimental Investigation on the Vibratory Characteristics of an Industrial Steam Turbine LP-Runner Blade With Lacing-Wire (81-Det-134) (A) N 108

Pfrommer, D. HTGR-GT and Electrical Load Integrated Control (80-WA/DSC-25) (A) Mr 116

Pharmaceutical Companies
Directory of Biological Products (BTR) S 50

Phase Change
Phase Change Around a Circular Cylinder (80-WA/HT-5) (A) Ap 103

Phase-Change Materials
Simulation Experiments of Phase-Change Thermal Systems (80-ENAs-25) (A) Mr 112

Phillips, J. H. Electric Generation Utilizing Two-Stroke Crosshead Marine Diesel Engines with Rankine Bottoming Cycle (81-DGP-2) (A) My 87

Phillips, W. F. The Effect of Froude Number on Entrainment in Two-Dimensional Line Plumes (81-FE-6) (A) Ag 83

Phoenix, R. Application of Structural Optimization Technique to Reduce the External Vibrations of a Gas-Turbine Engine (81-DET-143) (A) N 108

Phonographs
"World Without End;" A Journey in Sound (NR) O 74

Photinos, P. J. Adsorption Interference in Mixtures of Trace Contaminants Flowing Through Activated Carbon Adsorber Beds (80-ENAs-17) (A) Mr 112

Photography
Detecting Contaminants by Ultraviolet Photography (BTR) Ap 59

Photovoltaic Arrays
Thin-Film Solar Cells (NB) My 67

Photovoltaic Cells
Analytical Predictions of Liquid and Air Photovoltaic/Thermal Flat-Plate Collector Performance (80-WA/Sol-3) (A) Ap 92
Hawaiian Hospital Taps Sun (BTR) Ap 60

Photovoltaic Energy
Solar Outlook: Not So Sunny? (C) Mr 65

Photovoltaic Panels
Solar-Powered Radio Station (C) Mr 67

Photovoltaic Storage
A Space Technology Spinoff (ES) Ag 21

Photovoltaic System
Picture Worth 500 Words (C) S 48

Photovoltaic/Thermal Collectors
Design of Solar Cells for Use in Photovoltaic/Thermal Collectors (80-WA/Sol-37) (A) Ap 95

Photovoltaics
Energy Sufficiency in 2030—At What Price? (NR) My 56
The Parallel Heat Pump and Photovoltaic Heating and Cooling—Phase II (80-WA/Sol-40) (A) Ap 95
Selling Solar Overseas (ES) My 18

Physical Fitness
NASA Physical Fitness Manual (BTR) Mr 73

Physical-Thermal Models
The Design and Operation of Physical-Thermal Models (81-FE-16) (A) S 82

Physiological Changes
Evaluation of Biological Models Using Spacelab (80-ENAs-38) (A) Mr 113

Pierce, F. J. Elections to Fellow Grade Jl 82

Pierce, G. Let's Save Our Soil (C) My 43

Pierreponi, D. Towards Minimum Power for Environmental Control in Transport Aircraft (81-ENAs-4) (A) S 86

Piersol, A. G. Analytical Prediction of Aerospace Vehicle Vibration Environments (81-DET-29) (A) O 103

Pigment
Energy Converting Protein (EN) Mr 82

Pilings
An Analysis of the Thermal Fixation of Pilings (80-WA/HT-6) (A) Ap 103

Pilkey, W. The Balancing of Rotating Shafts by Quadratic Programming (80-DET-45) (A) F 121

Pilkey, W. D. A Direct Integration Technique for the Transient Analysis of Rotating Shafts (81-DET-56) (A) D 89

Pilon, B. A. Atmospheric Monitoring for Submarine Applications (80-ENAs-33) (A) Mr 113

Pin-Joints
Accessible Region and Synthesis of Robot Arms (80-DET-101) (A) Mr 109

Pinel, S. I. Endurance Tests with Large-Bore Tapered-Roller Bearings to 2.2 Million DN (81-Lub-56) (A) D 100

Pinkus, O. Analysis of Face Seals with Shrouded Pockets (81-Lub-49) (A) D 99; Analytical and Experimental Investigation of Magnetic Support Systems. Part I: Analysis (81-Lub-31) (A) D 98; Part II: Experimental Investigation (81-Lub-32) (A) D 98; The Effects of Friction Between Cylinders and Rubber Staves of Finite Thickness (81-Lub-30) (A) D 98

Pioneer Zephyr
Fifty-Fourth Landmark—The Pioneer Zephyr (NR) Ap 74

Pipe Cleanliness
Steam Blowing Acceptance Criteria: It's Time a Valid Criterion Exists for Commercial Power Stations (80-JPGC-Pwr-3) (A) F 116

Pipe Flow
Measurements in a Pipe Flow Issuing Perpendicularly into a Cross Stream (80-WA/HT-24) (A) Ap 104

Pipe Fracture
A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part II: Experimental Verification on a Type 304 Stainless Steel Pipe (80-WA/PVP-4) (A) Je 98

Pipe Rupture
A PWR Secondary System Behavior for Postulated Pipe Rupture (80-WA/NE-1) (A) Je 96

Pipe Segments
Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (80-WA/PVP-6) (A) Je 96

Pipe Walls
On Circular Pipe Wall Vibratory Response Excited by Internal Acoustic Fields (80-WA/NC-13) (A) F 124

Pipe Welding
Welding is Crucial (ES) O 26

Pipeline Materials
Clad Steels (C) Jl 46

Pipelines
Design of Carbon Dioxide Pipelines (81-PET-34) (A) My 91
ETSI on Test (ES) S 25
Pipelining Gas from the Canadian High Arctic (81-PET-20) (A) My 90
Rubber Lined Pipelines—An Overview (80-WA/MH-8) (A) Ap 96
Slurry Pipelines of the Future Ap 30
Tow Techniques for Marine Pipeline Installation (81-Pet-30) (A) My 90

Pipes
Computer Control for Seamless Pipe (IF) Ag 51
Ductile Axial Crack Extension in Pipes (80-WA/PVP-5) (A) Je 98
Stability of Developing Flow in a Pipe—Nonparallel Effects (81-APM-13) (A) S 84

Piping
Analytical Evaluation of Residual Stresses in Piping Subjected to Induction Heating Stress Improvement Process and Application to Operating Plants (81-PVP-19) (A) Ag 80
Cold Spring in an Existing Refinery (81-PVP-1) (A) Ag 79
Cold Springing of Piping Systems (81-PVP-26) (A) Ag 81
Comparison of LMFBR Piping Response Obtained Using Response Spectra and Time History Methods (81-PVP-28) (A) Ag 80
Design and Erection of Cold Spring Piping for Power Piping Systems (81-PVP-5) (A) Ag 79
Influence of Service Exposure on Base and Weld Metal of ½ Cr-½ Mo-¼ V High-Pressure Steam Inlet Piping (81-PVP-24) (A) Ag 80
Process Design Conditions for Boiler Blowdown System (81-PVP-37) (A) Ag 82
Significance of Centerline Lack-of-Penetration Defects in Double Seam-Welded SA-312 Pipe (81-PVP-33) (A) Ag 81

Piping Network
Energy Transport System Optimization for Distributed Networks of Solar Collectors (81-Sol-1) (A) My 87

Piping Systems
A Double Summation Procedure for the Combination of Seismic Responses of Multiple-Excited Piping Systems (80-WA/PVP-1) (A) **Ja 97**
Pressure Relief Valve Noise Attenuation (81-PVP-38) (A) **Ag 82**
Process Piping Systems (CB) **N 115**
A Rational Approach to Cold Spring of High-Temperature Piping Systems (81-PVP-42) (A) **Ag 82**
Pipitone, G. L. A Performance Monitoring Program for Coal Fired Steam-Electric Generating Plants (81-JPGC-Pwr-22) (A) **N 112**
Piscopo, P. F. Establishing Cruise-Engine Cycle Payoffs for a Supersonic VSTOL Aircraft (81-GT-100) (A) **Je 112**
Piston-Cylinder Assembly
The Influence of Swirl on the Flow Characteristics of a Reciprocating Piston-Cylinder Assembly (80-WA/FE-8) (A) **My 86**
Pitched Gears
Design of Spur Gears for Improved Efficiency (81-DE-4) (A) **Ag 78**
Pitching and Yawing
Optimum Balancing of Combined Pitching and Yawing Moments in High-Speed Machinery (80-DET-7) (A) **Mr 106**
Pittsburgh Coal
Fracture Mechanics Model for Pittsburgh Coal (81-Pet-16) (A) **My 90**
Pivoted Slider Bearings
The Pivoted, Spherical Cap Slider Bearing (81-Lub-4) (A) **D 95**
Placement
Placement of Engineering and Technology Graduates (EN) **Mr 82**
Plain Milling
Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part 1: Plain Milling with a Single-Toothed Helical Cutter (80-WA/Prod-4) (A) **My 82**; Part 2: Plain Milling with a Multitoothed Helical Cutter (80-WA/Prod-5) (A) **My 82**
Plain Strain
Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plain Strain, Numerical Results (80-WA/APM-3) (A) **Ja 99**
Plain Woven Fabrics
The Tearing of Plain Woven Fabrics Made from Ring, Open and Twistless and Twisted Yarns (80-Tex-4) (A) **F 122**
Planar Diffusers
A Prediction Method for Planar Diffuser Flows (81-FE-5) (A) **Ag 83**
Planar Linkage
Computer Aided Linkage Design Using the LINCAGES Package (81-DET-121) (A) **D 92**
Planar Linkage Mechanisms
The Finite Element Design of Linkages—A Comparison of Timoshenko and Euler Bernoulli Elements (81-DET-109) (A) **N 107**
A Variational Formulation for the Finite Element Analysis of High-Speed Machinery (80-WA/DSC-38) (A) **Mr 117**
Planar Linkages
New Complex-Number Forms of the Euler-Savary Equation in a Computer-Oriented Treatment of Planar Path-Curvature Theory of Higher-Pair Rolling Contact (80-DET-89) (A) **Mr 109**
A New Concept for Force Balancing Machines for Planar Linkages—Part I: Theory (80-DET-73) (A) **Mr 108**; Part II: Application to Four-Bar Linkage and Experiment (80-DET-74) (A) **Mr 108**
Planar Mechanical Systems
The Generalized Coordinate Selection for the Dynamics of Complex Planar Mechanical Systems (80-DET-85) (A) **Mr 108**
Planar Mechanisms
Design Sensitivity Analysis of Planar Mechanism and Machine Dynamics (80-DET-6) (A) **F 119**
The Finite Element Analysis of Mechanism Components Made From Fiber-Reinforced Composite Materials (80-DET-63) (A) **Mr 107**
Finite Element Quasi-Static Deformation Analysis of Planar Mechanisms with External Loads Using Static Condensation (81-DET-104) (A) **N 107**
MECSYN: An Interactive Computer Graphics System for Mechanism Synthesis by Algebraic Means (80-DET-68) (A) **Mr 107**
New Complex-Number Form of the Cubic of Stationary Curvature in a Computer-Oriented Treatment of Planar Path-Curvature Theory for Higher-Pair Rolling Contact (80-DET-90) (A) **Mr 109**
The Simultaneous Analytical Synthesis of Mass and Spring Elements in Planar Mechanisms (80-DET-50) (A) **Mr 106**
Planar Medium
Scattering Band Absorption for a Planar Medium (81-HT-61) (A) **O 98**
Planar Motions
Kinematic Mappings Part 1: Classification of Algebraic Motions in the Plane (80-DET-16) (A) **F 119**; Part 2: Rational Algebraic Motions in the Plane (80-DET-17) (A) **F 119**
Planar Multiloop Mechanisms
Optimum Synthesis of Multi-Loop Planar Mechanisms Via the Linear Partition of Design Equations (Method of No Misconceptions) (80-DET-1) (A) **F 118**
Planar Two-Gear Drives
Kinematic Synthesis of Planar Two-Gear Drives With Prescribed Dwell Characteristics (81-DET-2) (A) **O 103**
Plane Flow
The Flow of a Non-Newtonian Fluid Past Projections and Depressions (80-WA/APM-8) (A) **Ja 100**
Plane Jets
Potential Flow Solution for Two Obliquely Impinging Two-Dimensional Plane Jets of Different Stagnation Pressures (81-FE-18) (A) **S 81**
Plane Mechanisms
Geometric Analysis of Plane Mechanisms (80-DET-110) (A) **Mr 110**
Plane Rigid Body Guidance
Synthesis of Sliders for Plane Rigid Body Guidance (80-DET-109) (A) **Mr 110**
Plane Surfaces
Roughness Characteristics of Plane Surfaces Based on Velocity Similarity Laws (81-FE-34) (A) **S 83**
Planetary Gear
On the Kinematics of the Closed Epicyclic Differential Gears (81-DET-111) (A) **N 107**
Planning
The Role of Planning and Scheduling: Construction vs. Startup for Commercial Power Stations (81-JPGC-Pwr-12) (A) **N 111**
Plant Control Computer
The Process Computer: Frankenstein or Genie? **N 60**
Plant Control System
Control of a Nuclear Power Plant with Once-Through Steam Generators (80-WA/DSC-24) (A) **Mr 115**
The Plant Control System Design for the Clinch River Breeder Reactor Plant (80-WA/DSC-17) (A) **Mr 115**
Plant Efficiency
A Modular Optimizing Calculation Method of Power Station Energy Balance and Plant Efficiency (81-GT-22) (A) **Je 105**
Plant Equipment
Maintenance Planning, Control and Documentation, 2nd Ed. (CB) **My 92**
Plant Growth
Treatment of CELSS and PCELSS Waste to Produce Nutrients for Plant Growth (81-ENAs-19) (A) **O 100**
Plant Growth Chamber
A Chamber Design for Closed Ecological Systems Research (81-ENAs-37) (A) **O 100**
Plant Heat Rate
Effect of Turbine Design and Operation Factors on Plant Heat Rate (81-JPGC-Pwr-36) (A) **D 93**
Plants
Plants Flourish in Controlled Environment (BTR) **Ag 44**
Plaque Presentation
Plaque Piece Praised (C) **S 49**
Plastic Cards
Credit Cards that Remember (BTR) **Je 67**
Plastic Strain
Strain Concentration Factor as a Function of Strain in a Design Application (81-DE-5) (A) **Ag 78**
A Unified Model for Rolling Contact Life Prediction (81-Lub-42) (A) **D 99**
Plastic Strain Concentrations
Plastic Strain Concentrations in Perforated Structures Subjected to Alternating Loads (81-PVP-22) (A) **Ag 80**
Plasticity
On the Characterization of Strain-Hardening in Plasticity (81-APM-26) (A) **S 85**
On the Uniqueness and Stability of Endochronic Theory (80-WA/APM-24) (A) **Ja 101**
Plastics
Plastics Have the Edge (NB) **Ap 80**
Plate Cam Geometry
Matrix Methods in Plate Cam Geometry (80-DET-111) (A) **Mr 110**
Plate Cam Profiles
Kinematic Analysis of Plate Cam Profiles Not Analytically Defined (80-DET-12) (A) **F 119**
Plate Clutch
New Friction Plate Clutch (IF) **N 83**
Platelets
The Battle Against Thrombosis (BTR) **Jl 47**
Plates
Analysis of Plate Vibrations Using Superelements (81-DET-65) (A) **N 106**
Dynamics of Coupled Fluid-Structure Multiplate Systems (81-DET-145) (A) **D 91**
On the Influence of a Rigid Circular Inclusion on the Twisting and Shearing of a Shallow Spherical Shell (80-WA/APM-5) (A) **Ja 99**
Microcomputer Checks Butt-Weld Accuracy (BTR) **O 54**
Non-Linear Transient Analysis of Plates by Mixed Elements (81-DET-146) (A) **D 92**
Nonlinear Vibration of Layered Composite Plates Including Transverse Shear and Rotatory Inertia (81-DET-144) (A) **D 91**
Propagation of Elastic Pulses and Acoustic Emission in a Plate—Part 1: Theory (81-APM-4) (A) **S 84**; Part 2: Epicentral Responses (81-APM-5) (A) **S 83**; Part 3: General Responses (81-APM-6) (A) **S 83**
Quasi-Square Hole with Optimum Shape to an Infinite Plate Subjected to In-Plane Loading (80-WA/DE-3) (A) **Ap 98**
Temperature Variation in the Absorber Plate of an Air Heating Flat Plate Solar Collector (80-WA/Sol-2) (A) **Ap 82**
On the Unbonded Contact Between Plates and Layered Cylinders (80-WA/APM-11) (A) **Ja 100**
Platforms
Thermal Control Subsystem Definition for Science and Applications Platform (81-ENAs-30) (A) **S 87**
Play, D. Effects of Amplitude of Oscillation on the Wear of Dry Bearings Containing PTFE (81-lub-6) (A) **D 96**
Plotters
High-Performance Large-Format Pen Plotter (BTR) **F 53**
Plumb, O. A. A Study of Non-Darcy Natural Convection from a Vertical Heated Surface in a Saturated Porous Medium (81-HT-45) (A) **O 97**
Plume Shape
Diagnostic Measurements of Fuel Spray Dispersion (80-WA/HT-35) (A) **Ap 105**
Plumemill
A Waste Energy Power Generation Concept—The Plumemill (80-JPGC/Pwr-9) (A) **F 116**
Plumes
An Experiment and Model of a Fire Plume Rising from a Burning Heat Source of Finite Size (81-HT-5) (A) **S 89**
Plunkett, R. Statistical Properties of the Surface Pressure Distribution on a Yawed Cylinder in a Turbulent Flow Field (81-DET-35) (A) **O 103**
Plutonium
RADTU Processes Wastes (BTR) **Je 66**
Pneuil, D. The Morphology of Surface Damage Caused by Friction (81-Lub-14) (A) **D 97**
Pneumatic Grinder
Energy Efficient Muffler for Reduction of Exhaust Noise Generated by a Pneumatic Grinder (80-WA/NC-9) (A) **F 124**
Pneumatic Unloading
Pneumatic Unloading of Ships and Barges (80-WA/MH-10) (A) **Ap 97**
Pohto, H. A. Elections to Fellow Grade **Ja 95**
Poincare Map
An Application of the Poincare Map to the Stability of

Nonlinear Normal Modes (80-WA/APM-4) (A) **Ja 99**

Point Trajectories
On the Principle of Transference In Three-Dimensional Kinematics (80-DET-88) (A) **Mr 109**

Polan, N. W. The Effect of Ammonia and Oxygen Levels on the Corrosion Characteristics and Copper Release Rates of Copper Base Condenser Tube Alloys Under Simulated Steam-Side Conditions (81-JPGC-Pwr-9) (A) **N 111**

Polar Solar Astronomy
Solar Astronomy in a Frozen Land (NR) **Ap 76**

Political Maneuvering
Reagan Cuts Figure (WW) **S 72**

Pollack, M. L. Fluid-Resonator Response to Hydrodynamic Pressure Oscillations (80-WA/NC-7) (A) **F 124**

Pollard, E. I. Elections to Fellow Grade **Jl 82**

Polling Members
Can ASME Take Consensus Stands? (C) **My 43**

Pollutants
Acid Rain Studies (BTR) **Ap 58**
Effects of Pollutants and Urban Parameters on Atmospheric Temperature (80-WA/HT-4) (A) **Ap 103**
Indoor Pollutants (BTR) **D 62**

Pollution
Measuring Pollution by Laser (BTR) **Je 89**
Pollution-Measuring Devices to Assess Indoor Air (NR) **Je 81**

Polsky, M. P. Fuel Effectiveness of Cogeneration (80-JPGC/Pwr-8) (A) **F 116**

Polychlorinated Biphenyl Wastes
PCB Destruction Technology (BTR) **S 53**

Polyhedra
On Linkages and Mobile Polyhedra (80-DET-30) (A) **F 120**

Polymer Flow
Pressure Behavior During Polymer Flow in Petroleum Reservoirs (81-Pet-32) (A) **My 91**

Polymers
Cable Insulation Research (ES) **Ap 29**
Evaluation of Polymers as Lubricants in the Extrusion of Aluminum (81-Lub-21) (A) **D 97**

Ponderosa Pine
Single Grit Simulation of the Abrasive Machining of Wood (80-WA/Prod-2) (A) **My 82**

Poon, C. C. An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) (A) **Je 106**

Pope, R. J. Experimental Determination of Vibration Parameters Required in the Statistical Energy Analysis Method (81-DET-19) (A) **N 104**

Popov, R. V. Dynamic Analysis of Variators with Half Ball and Two Discs as Non-Holonomic Systems (80-DET-95) (A) **Mr 109**

Popular Pages
Wanted: More Technical Reading Matter (C) **S 49**

Population Renewal
Bond Graphs of Age-Dependent Renewal (80-WA/DSC-4) (A) **Mr 114**

Porosity
Effective Thermal Conductivity of Porous Solid-Gas Mixtures (80-WA/HT-63) (A) **My 84**

Porous Bodies
An Experimental and Analytical Investigation of Boiling Heat Transfer in Porous Bodies (81-HT-44) (A) **O 97**

Porous Layers
Forced Flow Cooling of a Volumetrically Heated Porous Layer (81-HT-46) (A) **O 97**
Locally and Nonlocally Reacting Flexible Porous Layers; A Comparison of Acoustical Properties (80-WA/NC-14) (A) **F 124**
A Numerical Study of Natural Convection in a Horizontal Porous Layer Subjected to an End-to-End Temperature Difference (80-WA/HT-39) (A) **Ap 106**

Porous Media Flow
An Equivalent Continuum Model for Fluid Flow, Heat and Mass Transport in Geologic Materials (81-HT-54) (A) **O 96**

Porous Medium
An Experimental Investigation of Free Convection About a Heated Inclined Surface in a Porous Medium (81-HT-85) (A) **O 99**

Porous Metal
Thermal and Flow Analysis of a Convection, Air-Cooled Ceramic Coated Porous Metal Concept for Turbine Vanes (81-HT-48) (A) **O 97**

Porous Structure
The Factors Influencing the Formation of Li_2CO_3 from LiOH and Co_2 (80-ENAs-45) (A) **Mr 114**

Porous Surface
Suppressing Jet Buzz-Saw Noise (BTR) **Ja 63**

Porowski, J. S. Plastic Strain Concentrations in Perforated Structures Subjected to Alternating Loads (81-PVP-22) (A) **Ag 80**

Portable Detectors
Ultrasonic Device Tests and Measures Tire Trends (IF) **Ag 51**

Portable Evacuation Compressors
The Performance of Portable Evacuation Compressors in Gas Transmission Service (81-GT-140) (A) **Jl 85**

Portable Meteorological Packages
The International Energy Agency's Program to Develop a Portable Meterological Instrument Package for Solar Energy Applications (80-WA/Sol-27) (A) **Ap 95**

Portable Oxygen Subsystem
A Portable Oxygen Subsystem—Description and Preliminary Thermal Performance Prediction (80-ENAs-7) (A) **Mr 111**

Portable Trailer Concept
Portable Computerized Power Plant Equipment Testing **Mr 58**

Porter, D. Maintenance of Aero-Derived Industrial Gas Turbines (81-GT-192) (A) **Jl 89**

Porter, L. M. Utility Experience with an Availability Improvement Program: Status and Current Direction (80-JPGC/Pwr-18) (A) **F 117**

Porter, R. W. Closed-Cycle Evaporative Cooling Systems: Their Off-Design Performance **D 40**

Position/Force Control
Hybrid Position/Force Control of Manipulators (80-WA/DSC-23) (A) **Mr 115**

Post-Graduate Enrollment
Make Grad School More Attractive (C) **Jl 46**

Postdoctoral Appointments
Lower Expectations Found in Today's Ph.D. Group (EN) **O 84**

Postdoctoral Fellowships
Minority Scholars Awarded Fellowships (EN) **S 73**

Potable Water
Advanced Microbial Check Valve Development (81-ENAs-45) (A) **S 88**
Preprototype Vapor Compression Distillation Subsystem Development (81-ENAs-25) (A) **S 87**

Potash Plant
Dead Sea Slurry Pump (IF) **Je 72**

Potential Failures
Detection and Early Diagnosis of Potential Failures of Rotating Machinery (81-JPGC-Pwr-28) (A) **N 113**

Potential Flows
The Effect of Gravity on Certain Curved Channel Potential Flows (81-FE-19) (A) **S 82**

Potiron, A. On a Finite Element Formulation of Dynamical Torsion of Beams Including Warping Inertia and Shear Deformation Due to Nonuniform Warping (81-DET-140) (A) **D 91**

Potter, R. W., II. Geothermal Energy: An Assessment **My 20**

Pound
More Metric Musings (C) **D 57**

Pow-R-Jac
Robot System Assists in Nuclear Plant Repairs (BTR) **Ja 61**

Powdered Coal
Car Runs on Coal Dust (NB) **Ag 63**

Powe, R. E. Thermal Performance Analysis of an MHD Simulation Test Facility (80-WA/HT-13) (A) **Ap 104**

Powell, W. R. Fracture Mechanics Model for Pittsburgh Coal (81-Pet-16) (A) **My 90**

Power
China Looks to Hydro Power (ES) **My 19**
The Coal Fired Producer Gas (CFPG) Engine—An Alternative for Power and Propulsion in the 80's (81-Pet-17) (A) **My 90**
Cogeneration: The Promise is Now **Ag 22**
The 1981 Joint Power Generation Conference, preview (NR) **Ag 62**
Old Hydro—New Life (ES) **F 22**
"Power—Gateway to Progress" at '81 JPGC (NR) **Ag 62**
Windmill Farm (ES) **Ap 28**

Power Boilers
Fires in Electrostatic Precipitators-Survey Results, Discussion and Recommendations (81-JPGC-APC-1) (A) **D 100**

Power Conversion Systems
Compact Closed Cycle Brayton System for Marine Propulsion (80-WA/GT-4) (A) **Ap 102**

Power Cycles
Closed-Cycle Evaporative Cooling Systems: Their Off-Design Performance **D 40**

Power, E. J. Digital Bispectral Analysis of Nonlinear Wave Couplings in Fluids (81-FE-32) (A) **S 83**

Power Engineering
Acoustic Emission Monitoring of Steam Turbines (81-JPGC-Pwr-16) (A) **N 111**
Attributes of Light Wall Copper-Nickel Condenser Tubing (81-JPGC-Pwr-10) (A) **N 111**
Boiler Heat Transfer Model for Operation Diagnostic Information (81-JPGC-Pwr-14) (A) **N 111**
A Closer Look at Gravimetric Feeder Design Using Load Cells (80-JPGC/Pwr-13) (A) **F 117**
Coal-Fired Unit Size Selection . . . Is Bigger Better? (81-JPGC-Pwr-34) (A) **D 93**
Coal Mixing: System and Equipment Design Considerations (81-JPGC-Pwr-25) (A) **N 113**
Conceptual Design of a Coal Fired Utility Boiler for Cycling Duty (80-JPGC/Pwr-16) (A) **F 117**
Conceptual Design of 100 Percent External Turbine Bypass Systems (80-JPGC/Pwr-19) (A) **F 117**
Condenser Provisions for On-Line Detection of Tube Sheet Inleakage (80-JPGC/Pwr-23) (A) **F 118**
Condenser Tube-to-Tube Sheet Joint Inleakage: An Overview (81-JPGC-Pwr-6) (A) **N 110**
Considerations in Evaluating Wet and Dry FGD Systems (81-JPGC-Pwr-5) (A) **N 110**
Continuous Condenser Tube Cleaning—An Update (81-JPGC-Pwr-13) (A) **N 111**
Conveyor Belt Scales and Gravimetric Weigh-feeders—An Evolution (81-JPGC-Pwr-11) (A) **D 92**
Corrosion Experiences in Large Steam Turbines (81-JPGC-Pwr-32) (A) **N 113**
Design and Operating Aspects of Campbell Plant Circulating Water System (80-JPGC/Pwr-17) (A) **F 117**
Designing for Three Parallel ID Fan Operation (81-JPGC-Pwr-8) (A) **N 111**
Detection and Early Diagnosis of Potential Failures of Rotating Machinery (81-JPGC-Pwr-28) (A) **N 113**
Detection of a Transverse Crack in a Turbine Shaft—The Oak Creek Experience (81-JPGC-Pwr-19) (A) **N 112**
Determining Turbulence Throttle Flow from Measured First Stage Shell Pressure—A Critical Assessment (81-JPGC-Pwr-17) (A) **N 112**
Development and Operational Testing of a Heat Pipe Dry Cooling Tower (80-JPGC/Pwr-22) (A) **F 118**
Development of a Rational Procedure for Monitoring Steam Turbine Performance (81-JPGC-Pwr-20) (A) **N 112**
The Development of Sea-Cure Condenser Tubing (Crucible SC-1) (81-JPGC-Pwr-3) (A) **N 111**
Drum Level Instrumentaion for Reliable Boiler Operation (81-JPGC-Pwr-21) (A) **N 112**
Early Detection of Cross-Sectional Rotor Cracks by Turbine Shaft Vibration Monitoring Techniques (81-JPGC-Pwr-26) (A) **N 112**
The Effect of Ammonia and Oxygen Levels on the Corrosion Characteristics and Copper Release Rates of Copper Base Condenser Tube Alloys Under Simulated Steam-Side Conditions (81-JPGC-Pwr-9) (A) **N 111**
Effect of Turbine Design and Operation Factors on Plant Heat Rate (81-JPGC-Pwr-36) (A) **D 93**
Factors Affecting Blade Ash-Erosion in Axial Induced Draft Fans (80-JPGC/Pwr-7) (A) **F 116**
Fan/Foundation Interaction—A Simplified Calculation Procedure (80-JPGC/Pwr-10) (A) **F 117**
Field Testing and Laboratory Evaluation of Corrosion Cracking of Rotor Steels (81-JPGC-Pwr-29) (A) **N 113**
Freed Pump Vibration Research—Interstage Fluid Annuli (80-JPGC/Pwr-20) (A) **F 117**
Fuel Effectiveness of Cogeneration (80-JPGC/Pwr-8) (A) **F 116**
Generator Monitoring System (81-JPGC-Pwr-23) (A) **N 112**

Hot Spot Detection in Generators with Optical Fibers (81-JPGC-Pwr-18) (A) N 112
Hydraulic and Dynamic Instabilities in Feed Pumps in Large Fossil and Nuclear Applications in the U.S.A. (80-JPGC/Pwr-21) (A) F 118
Improvement in Performance and Availability of Currently Operating MSR's (80-JPGC/Pwr-12) (A) F 117
Interim Report on Water Induction Detection Studies (81-JPGC-Pwr-27) (A) N 113
LNG Cogeneration Power Station (80-JPGC/Pwr-11) (A) F 117
Operational Experience with Large Steam Turbines in Nuclear Power Plants (80-JPGC/Pwr-4) (A) F 116
Overview of Major Causes of Pulverizer Failures (80-JPGC/Pwr-5) (A) F 116
A Performance Monitoring Program for Coal Fired Steam-Electric Generating Plants (81-JPGC-Pwr-22) (A) N 112
Procedures for Estimating the Probability of Steam Turbine Disc Rupture from Stress Corrosion Cracking (81-JPGC-Pwr-31) (A) D 92
Pulsation of High Pressure Turbine (80-JPGC/Pwr-14) (A) F 117
Redesign and Replacement of Connecticut Yankee Moisture Separator/Reheater (MSR) Tube Bundles (81-JPGC-Pwr-2) (A) N 110
Retrofitting Utility Power Plants for Cogeneration Using Crossover Pressure Control (81-JPGC-Pwr-33) (A) D 93
The Role of Planning and Scheduling: Construction vs. Startup for Commercial Power Stations (81-JPGC-Pwr-12) (A) N 111
Shell-and-Tube Heat Exchanger Failures in Feedwater Heaters, Condensers, and Other Heat Exchangers (81-JPGC-Pwr-1) (A) N 110
A Simplified ASME Acceptance Test Procedure for Steam Turbines (80-JPGC/Pwr-15) (A) F 117
Steady-State Digital Computer Model for Supercritical Steam Generators (81-JPGC-Pwr-4) (A) N 110
Steam Blowing Acceptance Criteria: It's Time a Valid Criterion Exists for Commercial Power Stations (80-JPGC/Pwr-3) (A) F 116
Stress Corrosion Cracking of Low Pressure Turbine Discs—An Industry Survey (81-JPGC-Pwr-30) (A) D 92
The Technical/Economic Issues and Reliability Requirements for Tampa Electric Company's Big Bend Unit #4 FGD System (81-JPGC-Pwr-35) (A) D 93
Tube to Tubesheet Joint Strengths (81-JPGC-Pwr-7) (A) N 110
Utility Considerations for Turbine Supervisory Instrumentation (81-JPGC-Pwr-24) (A) N 112
Utility Experience with an Availability Improvement Program: Status and Current Direction (80-JPGC/Pwr-18) (A) F 117
Utilization of Design Change Control to Reduce Cost and Schedule Impacts on Power Projects (80-JPGC/Pwr-6) (A) F 116
A Waste Energy Power Generation Concept—The Plumemill (80-JPGC/Pwr-9) (A) F 116

Power Generation
Application of Coal Flash Pyrolysis to Industrial Power Generation (81-IPC-Fu-4) (A) D 101
Economics of Heavy Fuels in Gas Turbines and Combined Cycles (81-GT-45) (A) Je 107
Hot Gas Cleanup Program for Pressurized Fluidized Bed Combustor Combined Cycle Power Generation (81-JPGC-GT-5) (A) D 95
Power Generation Efficiency (IF) D 65
Power Generation From a 770°C Heat Source by Means of a Main Steam Cycle, a Topping Closed Gas Cycle and an Ammonia Bottoming Cycle (81-GT-18) (A) Je 105
Power Generation Using a Downhill Conveyor (80-WA/MH-15) (A) Ap 97
Pulverized Coal Power Plants: The Next Logical Step D 18
Superplants for Power Generation: A Way to Improve Coal Utilization (80-WA/CD-2) (A) Ja 97

Power Generation Systems
LM2500 Gas Turbines for Mobile Statfjord B Platform—the North Sea (81-GT-172) (A) Jl 87

Power Industry
Forty-Third Annual Power Conference, preview (NR) Mr 80

Power Piping Systems
Design and Erection of Cold Spring Piping for Power Piping Systems (81-PVP-5) (A) Ag 79

Power Plants
An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) (A) Ja 97
Are Dry-Cooled Power Plants A Feasible Alternative? O 34
Closed-Cycle Evaporative Cooling Systems: Their Off-Design Performance D 40
Gas-Turbine-Topped Hybrid Power Plants for the Utilization of Geopressured Geothermal Resources (81-Pet-5) (A) My 88
Geothermal Comes to Nevada (ES) Ag 20
High Energy, High Purity (ES) My 19
HTGR-GT and Electrical Load Integrated Control (80-WA/DSC-25) (A) Mr 116
Integrated Environmental Control for Coal-Fired Power Plants (NR) Ap 68
Largest Consumer-Owned Power Plant (BTR) F 57
Low-Cost, Risk-Free Learning (ES) Jl 19
A Modular Optimizing Calculation Method of Power Station Energy Balance and Plant Efficiency (81-GT-22) (A) Je 105
New NDE Center (ES) Je 24
Operational, Control and Protective System Transient Analysis of the Closed-Cycle GT-HTGR Power Plant (80-WA/GT-1) (A) Ap 102
The Partial Coal Gasification Combined Cycle Power Plant (81-JPGC-GT-2) (A) D 95
Power Plant Noise Control (81-JPGC-Pwr-15) (A) N 111
Pulverized Coal Power Plants: The Next Logical Step D 18
Questions for Nuclear Advocates (C) My 42
Small and Micro Hydroelectric Power Plants: Technology and Feasibility (Energy Technology Review No. 60) (CB) Ap 109
Solar Thermal-Electric Power Plant (IF) My 54
Sunflower Seed Hulls as Supplementary Fuel to Coal-Fired Power Plants (81-JPGC-Fu-10) (A) D 94
Thermal Performance Analysis of an MHD Simulation Test Facility (80-WA/HT-13) (A) Ap 104
Unique Power Plant (BTR) Ja 60

Power Platforms
Active Thermal Control for an Advanced Power Platform (81-ENAs-31) (A) S 87

Power Production
Revitalizing Hydropower (ES) Je 24

Power Projects
Utilization of Design Change Control to Reduce Cost and Schedule Impacts on Power Projects (80-JPGC/Pwr-6) (A) F 116

Power Source
Wind: A Power Source for Forklift Trucks Ja 30

Power Stations
LNG Cogeneration Power Station (80-JPGC/Pwr-11) (A) F 117
Superconducting Generators from Conception to Power Station Ap 44

Power Systems
Materials Experiment Carrier Thermal Control Systems Study (81-ENAs-32) (A) O 100
Space Radiator Trade Studies for the 25-kW Power System (80-ENAs-27) (A) Mr 112

Power Test Codes
Alternative Energy Technologies and Their Impact on Performance Test Codes (80-WA/PTC-2) (A) Ap 101
Calculation of the Theoretical Critical Flow Rate of Saturated Steam (80-WA/PTC-3) (A) Ap 101
A Comparison of Two Alternative Methods for Defining Fan Performance (80-WA/PTC-1) (A) Ap 101

Power Transmission
Cable Insulation Research (ES) Ap 29

Power Transmission Systems
Virginia Tech Engineers to Study Fretting Corrosion (EN) Mr 83

Powered Hand Tools
Powered Hand Tool Efficiency (NB) Ap 80

Powerhouses
Hydro-Power Plant and Shot Tower Named Landmarks (NB) Ag 64

Practicing Engineers
CE Programs Popular at CU (EN) My 72
Products Liability: Are You Vulnerable? (CB) My 92

Prasad, B. On the Stability of a Composite Beam With Initial Stress to Moving Loads (81-APM-25) (A) S 85

Prasad, V. Transient Film Condensation on a Finite Horizontal Plate (81-HT-27) (A) O 95

Precipitators
Predicting the Effect of Fly Ash Resistivity Modification on Precipitator Collection Efficiency (81-JPGC-Fu-3) (A) D 93

Precision Control Linkages
Computer-Aided Design of Precision Control Linkages in the Classroom (80-WA/DSC-39) (A) Mr 117

Precision Measurement
Precision Measurement Grants (EN) N 94

Precision Points
Synthesis of an Epicyclic Gear Train for Path-Generation (80-DET-27) (A) F 119
Synthesis of Sliders for Plane Rigid Body Guidance (80-DET-109) (A) Mr 110

Prediction Method
A Mean Line Prediction Method for Axial Flow Turbine Efficiency (81-GT-58) (A) Je 109

Preflight Conditioning
NASA Physical Fitness Manual (BTR) Mr 73

Preliminary Analysis
Conceptual Designs and Preliminary Analysis of Structures (CB) N 115

Premixed Combustion Systems
The Influence of Premixed Combustion Flame Stabilizer Geometry on Flame Stability and Emissions (81-GT-26) (A) Je 106

Premixing
Premixing and Flash Vaporization in a Two-Stage Combustor (81-GT-41) (A) Je 106

Preprototype Subsystem
Development of a Preprototype Thermoelectric Integrated Membrane Evaporation Subsystem for Water Recovery (80-ENAs-46) (A) Mr 114

Presidency
A Perspective on the Presidency (WW) Ap 86

Presidents
Centennial Issue: Kudos and Comments (C) Ja 48

Press Fitted Units
Finite Element Stress Analysis of Planar Elastic Systems Having Press Fitted Units (80-DET-98) (A) Mr 109

Pressure
Effect of Pressure on Bubble Growth Within Liquid Droplets Heated to Their Limits of Superheat (81-HT-11) (A) O 94
Measurement of Heat Flux and Pressure in a Turbine Stage (81-GT-88) (A) Je 111

Pressure Angle
Numerical Scheme for Determining the Pressure Angle and Radius of Curvature of Cams (80-DET-70) (A) Mr 107

Pressure Behavior
Pressure Behavior During Polymer Flow in Petroleum Reservoirs (81-Pet-32) (A) My 91

Pressure Drops
A Mathematical Model of a Combustion Pot: Comparison of Theory and Experiment (80-WA/HT-32) (A) Ap 105
Pressure Drops and Heat Transfer in a Double Helix Heat Exchanger (80-WA/HT-38) (A) Ap 106

Pressure Field
Turbulent Pressure-Velocity Measurements in a Fully Developed Concentric Annular Air Flow (81-DET-23) (A) D 89

Pressure Head
Flow and Pressure Heat at the Inlet of Narrow Passages, Without Upstream Free Surface (81-Lub-41) (A) D 99

Pressure Loss
A Heat Exchanger Computational Procedure for Temperature-Dependent Fouling (81-HT-75) (A) O 96

Pressure Nozzles
Drop-Size Distributions of Newtonian and Bingham Liquid Sprays Produced by Fan-Jet Pressure Nozzles With and Without the Preorifice (81-PID-3) (A) My 86

Pressure Ratio
Design Analysis of High-Efficiency Low-Stress Ceramic Gas Turbines (81-GT-130) (A) Jl 84

Pressure Relief Valves
Design of Spring Loaded Safety Valves (81-PVP-40) (A) **Ag 82**
Pressure Surfaces
Flow Transition Phenomena and Heat Transfer Over the Pressure Surfaces of Gas Turbine Blades (81-GT-107) (A) **Je 112**
Pressure Variation
Observation of Pressure Variation in the Cavitation Region of Submerged Journal Bearings (81-Lub-11) (A) **D 96**
Pressure-Velocity Measurements
Turbulent Pressure-Velocity Measurements in a Fully Developed Concentric Annular Air Flow (81-DET-23) (A) **D 89**
Pressure Vessels
Pressure Vessel Handbook, 5th Ed. (CB) **AG 85**
Pressure Vessels: An Integrated Approach to Design, Analysis, and Manufacturing (81-DET-119) (A) **N 107**
Pressure Vessels and Piping
Analysis of Prestressed Double-Wall Tubing for LMFBR Steam Generators (81-PVP-25) (A) **Ag 81**
An Analysis of, and Some Observations on, Dynamic Fracture in an Impact Test Specimen (81-PVP-18) (A) **Ag 80**
Analytical Evaluation of Residual Stresses in Piping Subjected to Induction Heating Stress Improvement Process and Application to Operating Plants (81-PVP-19) (A) **Ag 80**
On the Suckling Design of Spherical Shells (81-PVP-32) (A) **Ag 81**
Classification of Clamp-Induced Stresses in Thin-Walled Pipe (81-PVP-17) (A) **Ag 80**
Cold Spring in an Existing Refinery (81-PVP-1) (A) **Ag 79**
Cold Springing of Piping Systems (81-PVP-26) (A) **Ag 81**
Comparison of LMFBR Piping Response Obtained Using Response Spectra and Time History Methods (81-PVP-28) (A) **Ag 80**
Delamination of Layered Cylindrical Shells Under Internal Pressure (80-WA/PVP-7) (A) **Ja 98**
Design and Erection of Cold Spring Piping for Power Piping Systems (81-PVP-5) (A) **Ag 79**
Design of Spring Loaded Safety Valves (81-PVP-40) (A) **Ag 82**
A Double Summation Procedure for the Combination of Seismic Responses of Multiple-Excited Piping Systems (80-WA/PVP-1) (A) **Ja 97**
Ductile Axial Crack Extension in Pipes (80-WA/PVP-5) (A) **Ja 98**
Dynamic Crack Propagation Analysis of the SEN Specimen by a Numerical Method (80-WA/PVP-2) (A) **Ja 97**
Dynamic Crack Propagation in Very Ductile Materials—The Influence of Inertia (80-WA/PVP-8) (A) **Ja 98**
Dynamic Fracture Initiation in Metals and Preliminary Results on the Method of Caustics for Crack Propagation Measurements (81-PVP-15) (A) **Ag 80**
The Effects of Induction Heating Parameters on Controlling Residual Stress in Intermediate Size Pipes (81-PVP-31) (A) **Ag 81**
Evaluation of Dynamic Load Combination Fatigue Damage (81-PVP-20) (A) **Ag 80**
Failure Analysis Study of a Steam-Jacketed Pressure Vessel in Coffee Decaffeination Service (81-PVP-7) (A) **Ag 82**
Failure of a High-Pressure Vessel in Ammonia Service (81-PVP-8) (A) **Ag 79**
Fatigue Crack Growth in Pressurized Water Reactor Feedwater Lines (81-PVP-2) (A) **Ag 79**
Fatigue Design in Mining Size Reduction Equipment (81-PVP-9) (A) **Ag 79**
Fatigue and Fracture Analysis of Two Turbine Shafts (81-PVP-27) (A) **Ag 81**
FETF Core Component Duct Lifetime: Criteria and Core Management Methods (81-PVP-23) (A) **Ag 80**
3-D Finite Element Analysis for the Investigation of Feedwater Line Cracking in PWR Steam Generators (81-PVP-3) (A) **Ag 78**
Flow Model Test for the Investigation of Feedwater Line Cracking for PWR Steam Generators (81-PVP-4) (A) **Ag 79**
Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (80-WA/PVP-6) (A) **Ja 98**
Hydraulically Expanded Tube to Tubesheet Joints (81-PVP-35) (A) **Ag 82**
Impacted Notch Bend Specimens (81-PVP-14) (A) **Ag 79**
Implication of Stress Range for Inelastic Analysis (81-PVP-34) (A) **Ag 82**
Influence of Service Exposure on Base and Weld Metal of ½ Cr-½ Mo-¼ V High-Pressure Steam Inlet Piping (81-PVP-24) (A) **Ag 80**
J-Integral Estimation Procedures (81-PVP-10) (A) **Ag 79**
LMFBR Designs for the Twenty-First Century (81-PVP-29) (A) **Ag 81**
Monitoring of Nuclear Power Plant Reactor Vessel Thermal Transients and Fatigue Usage Factors (81-PVP-12) (A) **Ag 79**
Optimum Design and Creep Relaxation of Dissimilar-Material Multilayer Shrink Fitted Vessels (81-PVP-30) (A) **Ag 81**
A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part I: J-Integral Analysis (80-WA/PVP-3) (A) **Ja 98**; Part II: Experimental Verification on a Type 304 Stainless Steel Pipe (80-WA/PVP-4) (A) **Ja 98**
Plastic Strain Concentrations in Perforated Structures Subjected to Alternating Loads (81-PVP-22) (A) **Ag 80**
Presentation of Failure Analysis Data by the Fatigue Fracture Mechanics Diagram (81-PVP-11) (A) **Ag 80**
Pressure Relief Valve Noise Attenuation (81-PVP-38) (A) **Ag 82**
Process Design Conditions for Boiler Blowdown System (81-PVP-37) (A) **Ag 82**
PWR S/RV Line Qualification to Gas Discharge Conditions (81-PVP-41) (A) **Ag 82**
Qualification of Induction Heating Stress Improvement for Mitigation of Stress Corrosion Cracking (81-PVP-13) (A) **Ag 79**
A Rational Approach to Cold Spring of High-Temperature Piping Systems (81-PVP-42) (A) **Ag 82**
Residual Stress Redistribution Caused by Notches and Cracks in a Partially Autofrettaged Tube (81-PVP-6) (A) **Ag 79**
Significance of Centerline Lack-of-Penetration Defects in Double Seam-Welded SA-312 Pipe (81-PVP-33) (A) **Ag 81**
Spurious Opening of Hydraulic-Assisted, Pilot-Operated Valves—An Investigation of the Phenomenon (81-PVP-39) (A) **Ag 82**
A Study on Creep Behavior Evaluation for Welded Joint in High Temperature Structure Design (81-PVP-36) (A) **Ag 82**
Transition From Brittle to Ductile Fracture for a Rapidly Propagating Crack (81-PVP-16) (A) **Ag 80**
Vibrations of Cylindrical Shells With Time-Dependent Boundary Conditions (81-PVP-21) (A) **Ag 80**
Pressurized Equipment Container
Environmental Control of a Pressurized Equipment Container for Shuttle Flights—The Spacelab Igloo (80-ENAs-19) (A) **Mr 111**
Pressurized Gasification
High Temperature Removal of Alkali and Particulates in Pressurized Gasification Systems (81-GT-67) (A) **Je 109**
Pressurized Pipes
Dynamic Crack Propagation in Very Ductile Materials—The Influence of Inertia (80-WA/PVP-8) (A) **Ja 98**
Pressurized Water Reactors
Fatigue Crack Growth in Pressurized Water Reactor Feedwater Lines (81-PVP-2) (A) **Ag 79**
Preston, G. T. Advances in Environmental Control Technology for Coal-Fired Power Plants (81-JPGC-APC-2) (A) **D 100**
Prestressing
A Rational Approach to Cold Spring of High-Temperature Piping Systems (81-PVP-42) (A) **Ag 82**
Preswirled Cooling Airflow
An Investigation of a Preswirled Cooling Airflow to a Turbine Disc by Measuring the Air Temperature in the Rotating Channels (81-GT-132) (A) **Ji 84**
Prevost, J. H. Finite-Element Solution of Elastic-Plastic Boundary—Value Problems (81-APM-17) (A) **S 84**
Price, S. J. Fluidelastic Instability of an Infinite Double Row of Circular Cylinders Subject to a Uniform Crossflow (81-DET-24) (A) **D 89**
Price Controls
Energy Sufficiency in 2030—at What Price? (NR) **My 56**
Prioritizing Research Projects
A Method for Evaluating the Relative Worth of Research and Development Tasks to Prioritize Them (80-WA/Mgt-4) (A) **Ja 103**
Proano, E. A. Application of Production Systems Analysis to Determine Completion Sensitivity on Gas Well Production (81-Pet-13) (A) **My 89**; Application of Systems Analysis Techniques in Optimizing Gas Lift Installations (81-Pet-33) (A) **My 91**
Probabilistic Models
Probabilistic Models in Computer Automated Slider-Crank Function Generator Design (80-DET-46) (A) **F 121**
Probability Principles
Analysis and Synthesis of Mechanical Error in Cam-Follower Systems (80-DET-22) (A) **F 120**
Probe Perturbation
An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) (A) **Je 106**
Process Control
An Adaptive Dead Time Compensator for Process Control (80-WA/DSC-10) (A) **Mr 115**
Computerizing Process Control (ES) **Ag 20**
Strengthening Mechanisms and Process Controls for Super Waspaloy (81-GT-175) (A) **Ji 88**
Process Control Industry
The Process Computer: Frankenstein or Genie? **N 60**
Process Industries
Drop-Size Distributions of Newtonian and Bingham Liquid Sprays Produced by Fan-Jet Pressure Nozzles With and Without the Preorifice (81-PID-3) (A) **My 86**
Energy Conservation Through Process Modification and Control (81-PID-2) (A) **My 86**
Methanol—The Efficient Conversion of Valueless Fuels into a Versatile Fuel and Chemical Feedstock (81-PID-1) (A) **My 86**
Observations from Ten Years of Industrial Plant Energy Surveys (81-PID-4) (A) **My 86**
Process Modification
Energy Conservation Through Process Modification and Control (81-PID-2) (A) **My 86**
Process Parameters
Effects of Process Parameters on Hammer Noise (81-DET-95) (A) **N 106**
Processes
Design of Digital Feedforward/Preview Controllers for Processes With Predetermined Feedback Controllers (80-WA/DSC-2) (A) **Mr 114**
Producibility Engineering
Interrelationships Between Methods Engineering and Producibility Engineering (81-DE-3) (A) **Ag 77**
Product Forms
The Effect of Product Form Upon Fatigue-Crack Growth Behavior in Alloy 718 (81-Mat-1) (A) **O 102**
Product Liability
Failure Analysis and Expert Witness for Products Liability—A Responsibility for the Engineering Profession (80-WA/Mgt-6) (A) **Ja 103**
Products Liability: Are You Vulnerable? (CB) **My 92**
Product Safety Standards
Should Government Control Exports of Unsafe Products? (STV) **Ja 77**
Production Engineering
Adaptive Control Optimization of Grinding (80-WA/Prod-12) (A) **My 82**
Axisymmetric Upset Forging: A Semi-Empirical Approach (80-WA/Prod-21) (A) **My 83**
Circular Saw Vibration Control by Induction of Thermal Membrane Stresses (80-WA/Prod-8) (A) **My 82**
A Data Dependent Systems Approach to Dynamics of Surface Generation in Turning (80-WA/Prod-25) (A) **My 83**

A Deep Drawing Test for Determining the Punch Coefficient of Friction (80-WA/Prod-10) (A) **My 82**
Explicit Identification of Machine Tool Structure and Cutting Process Using Bivariate Time Series Models (80-WA/Prod-27) (A) **My 84**
Flexible Manufacturing Systems, Metal Cutting and Material Conservation (80-WA/Prod-6) (A) **My 82**
The Hammer QSD-Quick Stop Device for High-Speed Machining and Rubbing (80-WA/Prod-13) (A) **My 82**
In-Process Measurement of Surface Roughness in Turning by Laser Beams (80-WA/Prod-17) (A) **My 83**
On the Mechanics of Chip Segmentation in Machining (80-WA/Prod-3) (A) **My 82**
A Method to Measure Contact Pressure Between Metallic Surfaces by Changes in Surfaces Roughness (80-WA/Prod-18) (A) **My 83**
On-Line Hole Quality Evaluation for Drilling Composite Material Using Dynamic Data (80-WA/Prod-16) (A) **My 83**
Optimization of Multipass Turning with Constraints (80-WA/Prod-22) (A) **My 83**
Optimum Process Design for a Single-Stage Multifunctional Production System (80-WA/Prod-19) (A) **My 83**
Quantitative Relationships for Acoustic Emission from Orthogonal Metal Cutting (80-WA/Prod-26) (A) **My 84**
Reference-Pulse Circular Interpolators for CNC Systems (80-WA/Prod-7) (A) **My 82**
Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part 1: Plain Milling with a Single-Toothed Helical Cutter (80-WA/Prod-4) (A) **My 82**; Part 2: Plain Milling with a Multitoothed Helical Cutter (80-WA/Prod-5) (A) **My 82**
The Role of Wheel-Work Deflection in Grinding Operations (80-WA/Prod-11) (A) **My 82**
Single Grit Simulation of the Abrasive Machining of Wood (80-WA/Prod-2) (A) **My 82**
System Approach to the Thermal Behavior and Deformation of Machine Tool Structures in Response to the Effect of Fixed Joints (80-WA/Prod-14) (A) **My 83**
Tool-Chip Contact Length in Orthogonal Machining (80-WA/Prod-23) (A) **My 83**
Tooling Design for ECM—A Finite Element Approach (80-WA/Prod-9) (A) **My 82**
Upper Bound Analysis of Axisymmetric, Closed-Die Forgings (80-WA/Prod-1) (A) **My 84**

Production Equipment
New Venture in Engineering Education (EN) **Je 92**

Production Management
Computer-Aided Design (EN) **Je 74**

Production Processes
Computerizing Process Control (ES) **Ag 20**

Production Systems Analysis
Application of Production Systems Analysis to Determine Completion Sensitivity on Gas Well Production (81-Pet-13) (A) **My 89**

Productivity
Automation Seen as Key Piece in Productivity Puzzle at Material Handling Show (NR) **Je 85**
CAD/CAM Center at University of Detroit (EN) **My 71**
CAD/CAM Loop for Automatic Machining of Large Parts (BTR) **My 45**
Government as the Problem (C) **Ap 54**
Improving Productivity in Machining (81-DE-2) (A) **Ag 77**
INFO/MFG Exposition and Conference, review (NR) **Mr 78**
Manufacturing/Engineering Applications Center (EN) **D 80**
Modular Factory System for Greater Productivity (BTR) **Je 68**
Motion and Time Study: Design and Measurement of Work, 7th Ed. (CB) **My 92**
Productivity, Professionalism, and the Public Interest **Je 58**
Robot Technology (NB) **Ag 63**
Steel-Collar Worker (NB) **My 66**
Survey Reveals Value of "Bottom Up" Management (NR) **S 69**
Using CAD/CAM to Improve Productivity: The IPAD Approach **N 64**

Productivity Engineering
'Tried and True' Work Principles Still Apply (NR) **Ap 75**

Productivity Gains
Conveyor Systems and Innovations (80-WA/MH-16) (A) **Ap 97**

Professional Audience
Educational T.V. to Aim for Professional Audience (EN) **O 85**

Professional Behaviors
Putting Engineering Education to Work **O 28**

Professional Courtesy
Professional Courtesy Needed (C) **Jl 46**

Professional Development
SWE Plans '82 National Convention (NB) **N 91**

Professional Engineering Technicians
Engineering Technicians (C) **O 50**

Professional Engineers
No Substitute for Knowledge (C) **D 56**
Zwiep's Important Message (C) **Ap 54**

Professional Registration
Helping the Student Section Help Itself **Je 54**

Professional Salary Survey
Computer Programmers/Engineers Top "Most-Wanted List" (NR) **F 62**

Professional Societies
Congress and the Technical Professional (WW) **Mr 86**

Professionalism
Ethics and Education for Professionalism (STV) **N 99**
Productivity, Professionalism, and the Public Interest **Je 58**
Toward Full Professionalism (C) **Ja 48**

Professionals
The Outdated "Professional Man" (C) **Ag 43**

Profiles
Comparison of Profiles and Fluxes of Heat and Momentum Above and Below an Air-Water Interface (80-WA/HT-68) (A) **Ap 107**

Progressive Transmission
Machine Unit with Controlled Impulse Progressive Transmission (80-DET-36) (A) **F 121**

Project Environment
The Planning and Execution of Engineering Work in a Project Environment (80-WA/Mgt-2) (A) **Ja 102**

Pro-Nuclear Scientists
Against Mumbo Jumbo (C) **Jl 46**

Prop-Fans
The Role of Flight Research Vehicles in Prop-Fan Technology Development (81-GT-216) (A) **Jl 91**

Propellants
Rocket Testing Site (EN) **O 85**

Propeller Pumps
Effects of Camber Variation on Performance Characteristics of a High Specific Speed Propeller Pump (81-FE-26) (A) **S 82**

Propulsion
The Coal Fired Producer Gas (CFPG) Engine—An Alternative for Power and Propulsion in the 80's (81-Pet-17) (A) **My 90**
The Navy PATE Program (81-GT-189) (A) **Jl 88**

Propulsion Module
Progress in the Development of the Marine Spey, SM1A (81-GT-186) (A) **Jl 89**

Propulsion Systems
Life Cycle Cost Before, During and After the Design of Aircraft Propulsion Systems (81-GT-111) (A) **Je 112**
An LNG Carrier Adjustable Speed Gas Turbine Electric Propulsion System (81-GT-112) (A) **Je 113**

Protective Ensemble
Firefighters Integrated Response Equipment System, Phase II (81-ENAs-42) (A) **O 101**

Protective System
Operational, Control and Protective System Transient Analysis of the Closed-Cycle GT-HTGR Power Plant (80-WA/GT-1) (A) **Ap 102**

Protein
Energy Converting Protein (EN) **Mr 83**

Proven Hardware
The Shuttle Extravehicular Mobility Unit (EMU)—A Combination of New Technology and Proven Hardware (81-ENAs-41) (A) **S 88**

Prusa, J. Heat Transfer of Fully Developed Flow in Curved Tubes (81-HT-39) (A) **O 96**

Pseudo-Bond Graph
Bond Graph Structural Models for Heat Exchangers (80-WA/Sol-17) (A) **Ap 94**

Pseudo-Unsteady Method
Application of a Fast Pseudo-Unsteady Method to Steady Transonic Flows in Turbine Cascades (81-GT-124) (A) **Je 113**

Pu, S. L. Residual Stress Redistribution Caused by Notches and Cracks in a Partially Autofrettaged Tube (81-PVP-6) (A) **Ag 79**

Public Perception
No Man Is an Island (80-WA/Mgt-5) (A) **Je 103**

Public Power Sector
Overview of Unconventional Energy Projects in the Public Power Sector (81-DGP-1) (A) **My 87**

Public Service Commissions
Utility Experience with an Availability Improvement Program: Status and Current Direction (80-JPGC/Pwr-18) (A) **F 117**

Pucci, P. F. Elections to Fellow Grade **D 87**

Pullmood, M. K. Field Experience with Gas Turbine Inlet Air Filtration (81-GT-193) (A) **Jl 89**

Pulldown Compressors
The Performance of Portable Evacuation Compressors in Gas Transmission Service (81-GT-140) (A) **Jl 85**

Pulleys
Dynamic Behavior of a Moving Belt Supported on Elastic Foundation (80-DET-55) (A) **Mr 106**

Pulsation
Pulsation of High Pressure Turbine (80-JPGC/Pwr-14) (A) **F 117**

Pulse Loading
Synthesis of Two-Degree-of-Freedom Mechanism with Pulse Loading (80-DET-82) (A) **Mr 108**

Pulsed Coherent Radiation
Thermal Performance of a Dielectric Stack Exposed to Pulsed Coherent Radiation (81-ENAs-14) (A) **S 87**

Pulses
Position Monitor for Mining Machines (BTR) **Mr 72**

Pulverized Coal
Flash Pyrolysis (ES) **Mr 36**
Predictions of Radiative Properties of Pulverized Coal and Fly-Ash Polydispersions (81-HT-24) (A) **O 94**
Pulverized Coal Power Plants: The Next Logical Step **D 18**
Reducing Auxiliary Fuel Consumption in Pulverized-Coal-Fired Boilers (80-WA/Fu-3) (A) **F 126**
On the Spectral Emissivity of Pulverized Coal and Char (81-HT-23) (A) **O 94**

Pulverized Coal Classifiers
Numerical Computation of Swirling Gas-Particle Flows: Application to Pulverized Coal Classifiers (80-WA/HT-31) (A) **Ap 105**

Pump Pressure
An Experiment on Pump Pressure Fluctuation, Vibration and Air Borne Noise Caused by Cavitation (81-DET-94) (A) **N 106**

Pump Shaft
Experimental Research on the Hydraulic Excitation Force on the Pump Shaft (81-DET-71) (A) **O 104**

Pump Vibration
Freed Pump Vibration Research—Interstage Fluid Annuli (80-JPGC/Pwr-20) (A) **F 117**

Pumped Hydropower
A New Era of Hydroelectric Development (STV) **D 85**

Pumped Storage Plant
ASME Landmarks Program (NR) **N 87**

Pumps
Computer-Aided Pump Design (IF) **N 83**
Dead Sea Slurry Pump (IF) **Je 72**
ALH2 Engine Fuel System on Board—Cold GH2 Injection into Two-Stroke Engine with LH2-Pump (81-HT-81) (A) **O 99**
New Fuel Injection Pump (IF) **Ap 66**
Plus ça change, plus c'est la même seal (C) **Ja 49**

Punch
A Deep Drawing Test for Determining the Punch Coefficient of Friction (80-WA/Prod-10) (A) **My 82**

Pure H_2O Ice
Thermal Rediation Properties of Pure H_2O Ice from 0.70 to 1.35 Micrometers (81-HT-67) (A) **O 99**

Putnam, D. F. Advanced Microbial Check Valve Development (81-ENAs-45) (A) **S 88**

Puttaiah, G. Don't Cold-Shoulder Coal (C) **My 42**

PWR Systems
An Investigation of Small Break Loss-of-Coolant Phenomena in a Small Scale Nonnuclear Test Facility (80-WA/NE-2) (A) **Ja 96**

Pyrolysis
Coal Pyrolysis (ES) **S 25**
Diesel Fuel from Biomass (ES) **S 24**
Flash Pyrolysis (ES) **Mr 36**
K-Fuel (ES) **Ja 20**
Pyrolysis/Gasification (ES) **Ap 28**
Pyrotechnic Devices
Soft Container for Explosive Nuts (BTR) **S 52**

Q

Quackenbush, C. L. Sintering Microstructure and Properties of Si_3N_4 and SiC Based Structural Ceramics (81-GT-220) (A) **Jl 91**
Quad
A Thousand Pardons (C) **Je 62**
Quadratic Programming
The Balancing of Rotating Shafts by Quadratic Programming (80-DET-45) (A) **F 121**
Quadruped Walking Vehicle
The Basic Motion Regulation System for a Quadruped Walking Vehicle (80-DET-34) (A) **F 120**
Qualified Engineers
Report Shows Decline in Quality of Engineering Education (EN) **Ja 72**
Quality Control
On-Site Quality Control of Insolation Measurements (80-WA/Sol-25) (A) **Ap 94**
Quan-chun, Z. Effect of Casing Treatment on Performance of a Three-Stage L.P. Compressor (81-GT-159) (A) **Jl 86**
Quarks
Fifth Quark, "Bottom," Makes Debut (BTR) **Jl 50**
Quartz Monzonite
Thermal Properties of Rock Salt and Quartz Monzonite to 573K and 50-MPa Confining Pressure (81-HT-51) (A) **O 95**
Quasi-Square Hole
Quasi-Square Hole with Optimum Shape to an Infinite Plate Subjected to In-Plane Loading (80-WA/DE-3) (A) **Ap 98**
Quasi-Static Deformations
New Finite Elements for Quasi-Static Deformations and Stresses in Mechaniams (80-WA/DSC-35) (A) **Mr 117**
Quattrone, P. D. Nitrogen Supply System Based on Hydrazine Dissociation (81-ENAs-27) (A) **O 101;** Oxygen Generation Subsystem for Spacecraft (81-ENAs-40) (A) **S 88;** Water Recovery by Catalytic Treatment of Urine Vapor (80-ENAs-16) (A) **Mr 112**
Queau, J. P. Optimal Shape Design of Turbine Blades (81-DET-128) (A) **N 108**
Quench Front
Predictions of Drop Models for the Dispersed Flow Downstream of the Quench Front in Tube Reflood Experiments (80-WA/HT-47) (A) **Ap 106**
Quenches
Results and Predictions of Scaled, Nuclear Large Break Loss-of-Coolant Experiments (80-WA/HT-49) (A) **Ap 106**
Quenching
Forced Convective Post-CHF Heat Transfer and Quenching (80-WA/HT-60) (A) **My 85**
Quick Stop Device
The Hammer QSD-Quick Stop Device for High-Speed Machining and Rubbing (A) **My 82**
Quick Test
A Quick Method for Testing if a Second Degree Polynomial Has Solutions in a Given Box (81-DET-118) (A) **N 108**
Quilici, M. D. Operating Experience of the EBR-II Steam Generating System (81-JPGC-NE-4) (A) **N 110**
Quinlan, A. V. A Mathematical Method for Prediction of Optimal pH and Temperature for Nitrification in Well-Aerated Natural and Domestic-Waste Waters (81-ENAs-24) (A) **O 101**
Quintiere, J. An Experimental Study of Upper Hot Layer Stratification in Full-Scale Multiroom Fire Senarios (81-HT-9) (A) **S 89**

R

Raask, E. Flame Imprinted Characteristics of Ash Relevant to Boiler Slagging, Corrosion and Erosion (81-JPGC-Fu-1) (A) **D 93**
Racehorses
Aluminum a 'Shoe-In' at Racetrack (BTR) **My 48**
Racks
Marketplace Developments in Storage Furniture, Racks and Shelves (80-WA/MH-1) (A) **Ap 96**
Raczkowski, G. Analysis of a Classical Straight Line Mechanism Using Interactive Graphics (81-DET-105) (A) **N 107**
Radcliffe, C. W. Geometric Analysis of Plane Mechanisms (80-DET-110) (A) **Mr 110;** Matrix Methods in Plate Cam Geometry (80-DET-111) (A) **Mr 110;** Synthesis of Sliders for Plane Rigid Body Guidance (80-DET-109) (A) **Mr 110**
Radhakrishnan, T. On-Line Hole Quality Evaluation for Drilling Composite Material Using Dynamic Data (80-WA/Prod-16) (A) **My 83**
Radial Bearings
Analysis of Defective Hydrostatic Radial Bearings for 5-MJ Homopolar Generator (80-WA/DE-14) (A) **Ap 101**
Radial In-Flow Turbines
Cooled Radial In-Flow Turbines for Advanced Gas Turbine Engines (81-GT-213) (A) **Jl 90**
Radial Serrations
Experience with Large Heavy-Duty Gas Turbine Rotors (81-GT-181) (A) **Jl 88**
Radial Stiffness
Fractional-Frequency Rotor Motion Due to Nonsymmetric Clearance Effects (81-GT-145) (A) **Jl 84**
Radial Taper
Experimental Evaluation of a Mixed Friction Hyrostatic Mechanical Face Seal Model Considering Radial Taper, Thermal Taper, and Wear (81-Lub-38) (A) **D 98**
Radially Steered Wheelsets
Considerations on the Use of Radially Steered Wheelsets in Railway Trucks (80-WA/RT-10) (A) **F 126**
Radiation
Computation of Radiation View Factors for Surfaces with Obstructed Views of Each Other (81-HT-57) (A) **O 98**
Heat Transfer by Conduction and Radiation in One-Dimensional Planar Medium Using the Differential Approximation (81-HT-72) (A) **O 98**
More Nuclear Views (C) **Mr 86**
Radiation Configuration Factors Between Disks and a Class of Axisymmetric Bodies (81-HT-56) (A) **O 97**
Radiation and Free Convection Shield for Passive Thermal Control (80-WA/Sol-7) (A) **Ap 93**
Radiation Heat Transfer in an Irregular Enclosure with Axial Flow (81-HT-70) (A) **O 98**
Radiation and Smoke from the Gas Turbine Combustor Using Heavy Fuels (81-HT-21) (A) **O 94**
Radioactive Waste from Nuclear Power Plants (CB) **D 102**
Tube Stresses in the Radiation Part of Solar Receivers and of Conventionally Fired Heaters (81-GT-200) (A) **Jl 89**
Urge Reduced Exposure from Radiological Technologies (BTR) **O 56**
Radiation Heat Transfer
A Best Estimate Radiation Heat Transfer Model Developed for TRAC-BD1 (81-HT-68) (A) **O 98**
On the Simplifications of Mathematical Model for Nongrey Gas Radiation Heat Transfer (81-HT-64) (A) **O 97**
Radiative Heat Transfer
Correlation Between Results of Zone Method and Experiment in Radiative Heat Transfer (81-HT-71) (A) **O 98**
An Integral Equation Approach to Radiative Heat Transfer Between Heat Conducting Solids of Arbitrary Shape (81-HT-73) (A) **O 98**
Radiative Heat Transfer in Fibrous Insulations—Part I: Analytical Study (81-HT-42) (A) **O 96;** Part II: Experimental Study (81-HT-43) (A) **O 97**
Radiative Heat Transfer to High Pressure Steam (81-HT-69) (A) **O 98**
Radiative Heat Transfer in a Plane-Layer Mixture of Nongray Particulates and Molecular Gases (81-HT-60) (A) **O 98**
Radiative Properties
Predictions of Radiative Properties of Pulverized Coal and Fly-Ash Polydispersions (81-HT-24) (A) **O 94**
Radiative Transfer
Finite Element Embedding with Optical Interference (81-HT-65) (A) **O 97**
Radiative View Factors
A Formulation for Radiative View Factors from Spheres to a Class of Axisymmetric Bodies (80-WA/HT-58) (A) **Ap 107**
Radiators
A Case Study of the Use of Experimental Modal Analysis as a Problem Solving Technique (81-DET-31) (A) **O 103**
Decision Making Support in the Assessment of Modular Radiator Systems (80-ENAs-11) (A) **Mr 111**
Mechanically Bonded Radiators for Locomotive Reliability (80-WA/RT-4) (A) **F 125**
Space Radiator Trade Studies for the 25-kW Power System (80-ENAs-27) (A) **Mr 112**
Radio Astronomy System
Space Techniques Adapted for Earth Studies (BTR) **Ap 62**
Radio Telescope
Surveying Unexplored Areas of Galaxy (BTR) **S 52**
Radioactive Materials
Cleaning Up (ES) **Ap 28**
Metal Decontamination Process (BTR) **My 49**
Radioactive Waste
Nature's Garbage Disposal? (C) **Ap 56**
Radioactive Waste from Nuclear Power Plants (CB) **D 102**
RADTU Processes Wastes (BTR) **Je 66**
Radioactivity
Handling Radioactivity: A Practical Approach for Scientists and Engineers (CB) **Ag 85**
Radiography
Jets Inspected with Neutrons (BTR) **My 50**
Radiological Technologies
Urge Reduced Exposure from Radiological Technologies (BTR) **O 56**
Radnoti, G. Method to Calculate the Balancing System of a Three-Cylinder Diesel Engine (81-DGP-8) (A) **My 88**
Radtke, W. H. Operating Experience of the EBR-II Steam Generating System (81-JPGC-NE-4) (A) **N 110**
Rafferty, J. M. Nuclear Blast Response of Air-breathing Propulsion Systems: Laboratory Measurements with an Operational J-85-5 Turbojet Engine (81-GT-164) (A) **Jl 87**
Raghavacharyulu, E. New Complex-Number Form of the Cubic of Stationary Curvature in a Computer-Oriented Treatment of Planar Path-Curvature Theory for Higher-Pair Rolling Contact (80-DET-90) (A) **Mr 109;** New Complex-Number Forms of the Euler-Savary Equation in a Computer-Oriented Treatment of Planar Path-Curvature Theory of Higher-Pair Rolling Contact (80-DET-89) (A) **Mr 109**
Raghuraman, P. Analytical Predictions of Liquid and Air Photovoltaic/Thermal Flat-Plate Collector Performance (80-WA/Sol-3) (A) **Ap 92**
Rahol, D. W. Evaluation of INCOCLAD 671/800 H Tubing After Nine Years of Reheater Service in a Coal-Fired Utility Boiler (80-WA/Fu-6) (A) **F 127**
Raibert, M. H. Hybrid Position/Force Control of Manipulators (80-WA/DSC-23) (A) **Mr 115**
Rail Cars
Fundamental Study on Semi-Actively Controlled Pneumatic Servo Suspensions for Rail Cars (81-RT-6) (A) **Ag 76**
Rail Freight
Progress in Railway Mechanical Engineering (1979-1980 Report of Survey Committee)—Cars and Equipment (80-WA/RT-11) (A) **F 126**
Rail Joints
An Investigation of Impact Loads Due to Wheel Flats and Rail Joints (80-WA/RT-1) (A) **F 125**
Rail Roughness Profile
Dynamic Analysis of High Speed Rocket Sleds (81-DET-42) (A) **O 104**
Rail Transportation
Analysis of Cyclic Thermal and Residual Stresses in CH36 Wheels Under Series of Severe Drag Braking (81-RT-10) (A) **Ag 78**

Analysis of Wheel Rail Force and Flange Force During Steady-State Curving of Rigid Trucks (81-RT-5) (A) **Ag 76**
Considerations on the Use of Radially Steered Wheelsets in Railway Trucks (80-WA/RT-10) (A) **F 126**
Cyclic Behavior of Class U Wheel Steel (80-WA/RT-9) (A) **F 126**
Designing Perturbed Test Tracks for Evaluating Rail Vehicle Dynamic Performance (81-RT-7) (A) **Ag 76**
The Development of an Optimum Wheel Profile for Self-Steering Trucks Under Heavy Axle Load Conditions (80-WA/RT-5) (A) **F 125**
Dynamic Response of Freight Vehicle Systems—A Performance Characterization (81-RT-4) (A) **Ag 76**
Effects of Centerplate Friction on Truck Yaw Hunting and Carbody Lateral Stability (81-RT-9) (A) **Ag 76**
Evaluation Techniques for Locomotive Performance (Fuel Economy, Adhesion, Tractive Effort) (81-RT-1) (A) **Ag 76**
Fatigue Analysis of Railroad Freight Car Truck Bolster (80-WA/RT-6) (A) **F 126**
Fundamental Study on Semi-Actively Controlled Pneumatic Servo Suspensions for Rail Cars (81-RT-6) (A) **Ag 75**
An Investigation of Impact Loads Due to Wheel Flats and Rail Joints (80-WA/RT-1) (A) **F 125**
Laboratory Investigation of Wheel Rail Contact Stresses for U.S. Freight Cars (80-WA/RT-8) (A) **F 126**
Mechanically Bonded Radiators for Locomotive Reliability (80-WA/RT-4) (A) **F 125**
Progress in Railway Mechanical Engineering (1979-1980 Report of Survey Committee)—Cars and Equipment (80-WA/RT-11) (A) **F 126**
Progress in Railway Mechanical Engineering (1979-1980 Report of Survey Committee)—Locomotives (80-WA/RT-12) (A) **F 126**
The SD50 Locomotive (81-RT-2) (A) **Ag 77**
"Super Series" Wheel Creep Control System (80-WA/RT-3) (A) **F 125**
Three Methods of Empty/Load Braking for Freight Cars (80-WA/RT-7) (A) **F 126**
Train Brake and Track Capacity Requirements for the 80s (81-RT-11) (A) **Ag 76**
Unit Train Coal Car Design Considerations (81-RT-3) (A) **Ag 77**
Wear Prediction for Locomotive Wheels (81-RT-8) (A) **Ag 76**
A Yard Test of Acoustic Signature Inspection of Railroad Wheels (80-WA/RT-2) (A) **F 125**

Rail Vehicles
Designing Perturbed Test Tracks for Evaluating Rail Vehicle Dynamic Performance (81-RT-7) (A) **Ag 76**
Parametric Excitation of Rail Vehicle Wheelsets Due to Track Irregularity (80-WA/DSC-20) (A) **Mr 116**
Stability and Curving Mechanics of Rail Vehicles (80-WA/DSC-15) (A) **Mr 115**

Railcar Wheels
Thermal Fatigue Analysis of a Railcar Wheel Under Drag Braking (80-WA/DE-4) (A) **Ap 98**

Railroad Freight Cars
Fatigue Analysis of Railroad Freight Car Truck Bolster (80-WA/RT-6) (A) **F 126**

Railroad Industry
ME Goes Full Steam Ahead (C) **O 50**

Railroad Wheels
A Yard Test of Acoustic Signature Inspection of Railroad Wheels (80-WA/RT-2) (A) **F 125**

Railroads
The Appalachian Connection (ES) **My 18**
Cab-in-Front Articulated Locomotive Receives Landmark Status (NR) **Jl 68**
Electric Traction on the Pennsylvania Railroad, 1895-1968 (CB) **My 92**
IEEE/ASME Joint Railroad Conference, review (NR) **Jl 65**
Railroads—Is There Light at the End of the Tunnel? (NR) **Jl 65**

Railway Cars
Influence of Restoring Torque Between Truck and Car-Body on the Transversal Stability of a Railway Car at Seven, Seventeen and Nine Degrees of Freedom (81-DET-41) (A) **O 104**
Railway Freight Car Field Tests (80-WA/DSC-7) (A) **Mr 115**

Railway Mechanical Engineering
Progress in Railway Mechanical Engineering (1979-1980 Report of Survey Committee)—Cars and Equipment (80-WA/RT-11) (A) **F 126**
Progress in Railway Mechanical Engineering (1979-1980 Report of Survey Committee)—Locomotives (80-WA/RT-12) (A) **F 126**

Railway Trucks
Considerations on the Use of Radially Steered Wheelsets in Railway Trucks (80-WA/RT-10) (A) **F 126**

Rainfall
Monsoon's Secrets Under Scrutiny (BTR) **F 52**
Raj, P. K. Analysis of JP-4 Fire Test Data and Development of a Simple Fire Model (81-HT-17) (A) **O 94**
Rajagopal, K. R. The Flow of a Non-Newtonian Fluid Past Projections and Depressions (80-WA/APM-8) (A) **Ja 100**
Rajagopal, S. A Deep Drawing Test for Determining the Punch Coefficient of Friction (80-WA/Prod-10) (A) **My 82**
Rajaiah, K. Quasi-Square Hole with Optimum Shape to an Infinite Plate Subjected to In-Plane Loading (80-WA/DE-3) (A) **Ap 98**
Rajaram, S. Heat Transfer in Developing MHD Channel Flows in an Inclined Magnetic Field (80-WA/HT-12) (A) **Ap 104**
Rajkumar, B. R. Laboratory Investigation of Wheel Rail Contact Stresses for U.S. Freight Cars (80-WA/RT-8) (A) **F 126**
Rajpaul, V. K. Closed Loop Environmental Control Systems for Fighter Aircraft (81-ENAs-2) (A) **S 86**

Ram Tensioner
At-Sea Evaluation of a Ram Tensioner for Ocean Deployment and Recovery (80-WA/OCE-5) (A) **Ap 97**
Ramachandran, P. V. Dynamic Response of Freight Vehicle Systems—A Performance Characterization (81-RT-4) (A) **Ag 76**
Ramalingam, S. Tool-Chip Contact Length in Orthogonal Machining (80-WA/Prod-23) (A) **My 83**
Ramanurti, V. Asymmetric Free Vibrations of Layered Conical Shells (81-DET-68) (A) **D 90**
Ramaraju, A. Experimental Studies on the Flow Within the Side Recesses of a Centrifugal Pump Impeller and Casing (80-WA/Fu-7) (A) **F 127**; (80-WA/FE-7) (A) **My 86**
Ramchandani, M. A PWR Secondary System Behavior for Postulated Pipe Rupture (80-WA/NE-1) (A) **Ja 96**
Ramey, H. J., Jr. Pressure Behavior During Polymer Flow in Petroleum Reservoirs (81-Pet-32) (A) **My 91**

Ramjets
Air-Film Cooling Returns to Ramjets (81-ENAs-8) (A) **S 86**
Ramo, S. *(author)* America's Technology Slip (CB) **Je 116**
Ramsell, J. D. Variable Elimination in the Home Fire Code (81-HT-3) (A) **S 88**
Ramsey, D. G. Fracture Mechanics Model for Pittsburgh Coal (81-Pet-16) (A) **My 90**
Ramulu, M. Impacted Notch Bend Specimens (81-PVP-14) (A) **Ag 79**
Rand, J. L. The Development of a Substitute Bird Model (81-GT-23) (A) **Je 106**
Rand, R. H. An Application of the Poincare Map to the Stability of Nonlinear Normal Modes (80-WA/APM-4) (A) **Ja 99**
Randall, R. B. A New Method of Modeling Gear Faults (81-DET-10) (A) **D 88**

Random Loading
Fatigue Damage of the Locomotive Suspension Elements Under Random Loading (80-WA/DE-7) (A) **Ap 98**

Random Point Excitation
Response of Sandwich Panels with Viscoelastic Core Under Random Excitation at a Point (81-DET-43) (A) **O 104**

Random Process
A Mathematical Basis for the Random Decrement Vibration Signature Analysis Technique (81-DET-13) (A) **N 104**

Random Response
Road Vehicle Train Response to Random Road Surface Undulations (80-WA/DSC-1) (A) **Mr 114**

Random Sea Simulation
Assessment of Linear Spectral Analysis Method for Offshore Structures Via Random Sea Simulation (81-Pet-9) (A) **My 89**
Rane, A. Numerical Study of Turbulent Droplet Flow Heat Transfer (80-WA/HT-48) (A) **Ap 106**
Ranganath, S. Analytical Evaluation of Residual Stresses in Piping Subjected to Induction Heating Stress Improvement Process and Application to Operating Plants (81-PVP-19) (A) **Ag 80**
Ranjan, G. V. Nonlinear Corrections for Edge Bending of Shells (80-WA/APM-15) (A) **Ja 100**
Rankin, G. Thermal Vacuum Testing of Flexible Radiator Systems (81-ENAs-46) (A) **S 88**
Rankin, G. W. Developing Region of Laminar Jets With Parabolic Exit Velocity Profiles (81-FE-3) (A) **Ag 82**

Rankine Bottoming Cycle
Electric Generation Utilizing Two-Stroke Crosshead Marine Diesel Engines with Rankine Bottoming Cycle (81-DGP-2) (A) **My 87**

Rankine Cycle
The Rebirth of the Rankine Cycle **Ja 41**
Rao, A. C. Optimum Sensitivity Synthesis of a Cam System Incorporating Manufacturing Tolerances (80-DET-31) (A) **F 119**; Optimum Stochastic Synthesis of Four-Bar Spatial Function Generators (80-DET-32) (A) **F 120**; Synthesis of an Epicyclic Gear Train for Path-Generation (80-DET-27) (A) **F 119**; Synthesis of Four-Bar Mechanism with Correlation Concept (80-DET-81) (A) **Mr 108**; Synthesis of Two-Degree-of-Freedom Mechanism with Pulse Loading (80-DET-82) (A) **Mr 108**
Rao, B. V. A. Response of Sandwich Panels with Viscoelastic Core Under Random Excitation at a Point (81-DET-43) (A) **O 104**
Rao, D. K. Closed-Cycle Evaporative Cooling Systems: Their Off-Design Performance **D 40**
Rao, J. S. Instability of Rotors in Fluid Film Bearings (81-DE-6) (A) **Ag 78**; Optimum Journal Bearing Parameters for Minimum Rotor Unbalance Response in Synchronous Whirl (81-DET-55) (A) **N 105**
Rao, S. R. Freezing Potential Studies in Wet Clay Systems (80-WA/HT-8) (A) **Ap 103**
Rao, S. S. Analysis and Synthesis of Mechanical Error in Cam-Follower Systems (80-DET-22) (A) **F 120**; Analysis and Synthesis of Mechanical Error in Geneva Mechanisms—A Stochastic Approach Part 1: External Geneva Mechanism (80-DET-24) (A) **F 120**; Part 2: Internal Geneva Mechanism (80-DET-25) (A) **F 120**

Rap Sessions
The Corporate Rap Session: An Employee Perspective **D 83**

Rapid Pressure
Nonequilibrium Flashing Model for Rapid Pressure Transients (81-HT-35) (A) **O 95**

Rational Procedure
Development of a Rational Procedure for Minitoring Steam Turbine Performance (81-JPGC-Pwr-20) (A) **N 112**
Ratzel, A. C. Heat Transfer by Conduction and Radiation in One-Dimensional Planar Medium Using the Differential Approximation (81-HT-72) (A) **O 98**
Rauschenmach, H. S. *(author)* Solar Cell Array Design Handbook: The Principles and Technology of Photovoltaic Energy Conversion (CB) **Ja 104**

Ravenstein Compressor Station
Re-Examination of Design Criteria for Natural Gas Compressor Station "Ravenstein"—Holland (81-GT-188) (A) **Jl 85**
Ravindranath, A. Interaction of Compressor Rotor Blade Wake with Wall Boundary Layer/Vortex in the End-Wall Region (81-Gr/GT-1) (A) **O 101**; Rotor Wake Mixing Effects Downstream of a Compressor Rotor (81-GT-98) (A) **Je 111**

Raw Manure
U.S. Government Supports Biogas Research (IF) **O 65**

Raw Materials
Biomass for the Chemical Industry (BTR) **D 59**
Materials & Energy **Ap 35**

Raw Shale Oil
Commercializing Shale Oil (ES) **JI 18**
Ray, A. Turbine Modeling for Power Plant Controller Design (80-WA/DSC-11) (A) **Mr 115**
Raymond, G. G., Jr. Vehicular Operations and New Developments in Unit Handling (80-WA/MH-5) (A) **Ap 96**
Reachability Boundaries
Estimating Reachability Boundaries for Resource Management Systems (80-WA/DSC-5) (A) **Mr 114**
Reaction Rate
Heat Transfer and Reaction Rate in Steam Gasification of Coal (80-WA/HT-14) (A) **Ap 104**
Reactor Materials
Thermal Radiation Properties of ThO_2 in Contact with Sodium and Steel (81-HT-66) (A) **O 98**
Reactor Research
Optimization of the HHT-1640 MW(th) Demonstration Nuclear Power Plant (HHT-Project) (81-GT-13) (A) **Je 105**
Reactor Shutdown
Development of a Self-Actuated Shutdown System (81-JPGC-NE-8) (A) **N 109**
Reactor Systems
Computer-Aided Reactor Analysis (ES) **Ag 21**
Reactors
An Analysis of the Steady-Power Natural Circulation Experiments in LMFBR Plants (80-WA/HT-41) (A) **Ap 106**
Atom Plant Certified as Cogeneration Facility (BTR) **My 49**
Closed-Cycle Gas Turbine Applications for Fusion Reactors (81-GT-17) (A) **Je 105**
Development of an Advanced Sabatier CO_2 Reduction Subsystem (81-ENAs-11) (A) **S 86**
LMFBR Designs for the Twenty-First Century (81-PVP-29) (A) **Ag 81**
Measurement of the Enthalpy and Specific Heat of a Be_2C-Graphite-UC_2 Reactor Fuel Material to 1980 K (80-WA/HT-54) (A) **My 84**
The Plant Control System Design for the Clinch River Breeder Reactor Plant (80-WA/DSC-17) (A) **Mr 115**
Reagan Administration
Reagan Cuts Figure (WW) **S 72**
What Will the New Year Bring? (WW) **Ja 76**
Reagan's Transition Advisers
American National Standards Institute's Annual Public Conference, preview (NR) **Mr 79**
Real Practice
Putting Engineering Education to Work **O 28**
Reciprocity
Application of the Principle of Reciprocity to Flexible Rotor Balancing (81-DET-49) (A) **N 105**
Reconstituted Coal
Coal Liquefaction (IF) **Ap 67**
Recoverable Deposits
Commercializing the Nonconventional (ES) **F 23**
RECSYN Program
Implementation of Solution Rectification Techniques in an Interactive Linkage Synthesis Program (80-DET-91) (A) **Mr 109**
Rectangular Plates
Dynamic Response of a Rectangular Plate with Initial Imperfections Under Large In-Plane Forces (81-DET-80) (A) **D 90**
Influence of the Aspect Ratio on the Dynamic Stability and Nonlinear Response of Rectangular Plates (81-DET-62) (A) **D 89**
Vibrations of Rectangular Plates With Nonuniform Elastic Edge Supports (80-WA/APM-28) (A) **Ja 102**
Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) (A) **S 85**
Recuperators
Evaluation of a Helical Flow Recuperator (81-HT-25) (A) **O 95**
High Effectiveness Recuperator for Waste Heat Recovery Applications (80-WA/HT-15) (A) **Ap 104**
Industrial Waste Heat Recovery (80-WA/HT-17) (A) **Ap 104**
Recycled Oxygen
A Regenerative Life Support System for Space Operations Center (SOC)—A Probable First Flight Application (81-ENAs-12) (A) **S 86**
Recycled Products
An Update of Solid Waste Resource Recovery Technology: Improved Economics through Potential Penetration of New Markets for Recycled Products (80-ENAs-9) (A) **Mr 111**
Recycled Water
NASA Technology Brings Recycled Water Closer to Home (BTR) **Je 58**
Recycling
Coal Liquefaction Pilot Plant Processing Wyoming Coal (BTR) **D 61**
Flywheel Power (BTR) **My 46**
Red, E. Analysis of a Classical Straight Line Mechanism Using Interactive Graphics (81-DET-105) (A) **N 107**
Reddy, C. P. Optimum Bearing-Support Damping for Rotor-Bearing Systems for Maximum Stable Operating Speed Range (81-DET-69) (A) **O 104**
Reddy, C. V. R. Response of Sandwich Panels with Viscoelastic Core Under Excitation at a Point Random (81-DET-43) (A) **O 104**
Reddy, G. M. Optimum Bearing-Support Damping for Rotor-Bearing Systems for Maximum Stable Operating Speed Range (81-DET-69) (A) **O 104**
Reddy, J. N. Nonlinear Vibration of Layered Composite Plates Including Transverse Shear and Rotatory Inertia (81-DET-144) (A) **D 91**; Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) (A) **S 85**
Reddy, V. S. Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) (A) **S 85**
Redfield, D. H. Sorry About the Errors (C) **F 48**
Redmond, K. C. *(author)* Project Whirlwind: The History of a Pioneer Computer (CB) **Ag 84**
Reed Valve
Heat Pipe Blocks Return Flow (BTR) **O 59**
Reedy, R. F. Elections to Fellow Grade **D 87**
Reethof, G. On Circular Pipe Wall Vibratory Response Excited by Internal Acoustic Fields (80-WA/NC-13) (A) **F 124**; A Study of Valve Noise Generation Processes for Compressible Fluids (80-WA/NC-15) (A) **F 125**
Reeve, J. L. Thermal Design of Fluid Test Cell for Growth of Crystals in Space (80-ENAs-13) (A) **Mr 111**
Reference-Pulse Interpolation
Reference-Pulse Circular Interpolators for CNC Systems (80-WA/Prod-7) (A) **My 82**
Refineries
The Refinery of the Future (ES) **S 25**
Refinery Processing Trends (IF) **Mr 77**
Reflecting Parts
Interferometer Accurately Measures Rotation Angle (BTR) **N 77**
Reflection
Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: P and SV Motion (81-APM-18) (A) **S 84**
Reflooding
Predictions of Drop Models for the Dispersed Flow Downstream of the Quench Front in Tube Reflood Experiments (80-WA/HT-47) (A) **Ap 106**
Refractory Anchor Installation
Refractory Construction (C) **D 56**
Refractory Flame Gunning
Coke Oven Wall Repair (IF) **N 82**
Refrigerant Compressors
A Vibration Source in Refrigerant Compressors (81-DET-72) (A) **O 104**
Refrigeration
Frictionless Devices Under Development (BTR) **Ap 57**
Refrigerating Gas Turbine Compressor Air Intake (81-GT-176) (A) **JI 88**
Refrigerator Systems
Small Helium Liquefier (IF) **D 64**
System Analysis Approach to Energy Conservation in Cooling Tower—Central Chiller Plant Systems (80-ENAs-3) (A) **Mr 111**
Regenerable CO_2 Collection
Regenerable CO_2 Collection for Spacecraft Application (81-ENAs-28) (A) **O 101**
Regeneration
Thermal Energy Storage and Regeneration (CB) **Ag 85**
Regenerative Cycle Gas Turbine System
A Market Research Effort Leading to the Development of a High-Efficiency 10,000-shp Gas Turbine System (81-GT-190) (A) **JI 89**
Regenerative Gas Turbines
Regenerative Gas Turbines for Naval Escort Ships (81-GT-115) (A) **Je 112**
Regenerative Life Support Program
Development Status of a Preprototype Water Electrolysis Subsystem (81-ENAs-9) (A) **S 86**
Regenerative Life Support System
The CELSS Program: An Overview of its Structure and Use of Computer Modelling (81-ENAs-36) (A) **S 88**
The Potential Role of Aerobic Biological Waste Treatment in Regenerative Life Support Systems (81-ENAs-20) (A) **S 87**
A Regenerative Life Support System for Space Operations Center (SOC)—A Probable First Flight Application (81-ENAs-12) (A) **S 86**
Registered Engineers
Toward Full Professionalism (C) **Ja 48**
Registry
Registry of Women Engineers (NB) **Mr 81**
Regulators
The Need to Train Regulators (C) **Je 62**
Regulatory Requirements
Car Research Keeps Up With Consumers (NB) **F 65**
Reheat Combustor
Preliminary Study on Reheat Combustor for Advanced Gas Turbine (81-GT-29) (A) **Je 106**
Reheat Gas Turbines
Comparison of the HTTT Reheat-Gas-Turbine Combined Cycle with the HTTT Nonreheat Gas-Turbine Combined Cycle (81-GT-69) (A) **Je 109**
Outline of Plan for Advanced Research Gas Turbine (81-GT-28) (A) **Je 107**
Reheat Pressure
The Reheat Gas Turbine with Steam-Blade Cooling—A Means of Increasing Reheat Pressure, Output and Combined Cycle Efficiency (81-GT-30) (A) **Je 106**
Reheaters
Redesign and Replacement of Connecticut Yankee Moisture Separator/Reheater (MSR) Tube Bundles (81-JPGC-Pwr-2) (A) **N 110**
Reid, H. C. Data Analysis and Analytical Predictions of a Steam Generator Tube Bundle Flow Field for Verification of 2-D T/H Computer Code (81-JPGC-NE-1) (A) **N 109**
Reid, R. C. The Use of Nickel and Cobalt Catalysts in a Bosch Reactor (80-ENAs-15) (A) **Mr 111**
Reid, R. L. Numerical Prediction of Wall Temperatures for Near-Critical Para-Hydrogen in Turbulent Upflow Inside Vertical Tubes (80-WA/HT-52) (A) **Ap 106**
Reiff, D. D. Response of Two Nuclear Power Plant Valves to Dynamic Excitation (81-DET-67) (A) **D 90**
Reindustrialization
M.S. and Ph.D. Shortage Threatens Reindustrialization (EN) **F 66**
Reinhard, K. Operational Experience with Large Steam Turbines in Nuclear Power Plants (80-JPGC/Pwr-4) (A) **F 116**
Reinhold, C. Design and Control Strategies for CELSS; Integrating Mechanistic Paradigms and Biological Complexities (81-ENAs-43) (A) **O 100**
Reissner, E. On the Influence of a Rigid Circular Inclusion on the Twisting and Shearing of a Shallow Spherical Shell (80-WA/APM-5) (A) **Ja 99**; On Torsion and Transverse Flexure of Orthotropic Elastic Plates (80-WA/APM-16) (A) **Ja 100**
Relative Datums
A CAD/CAM Graphics System with Relative Datums and Tolerances (81-DET-108) (A) **N 107**
Release Rate Data
Release Rate Model for Developing Fires (81-HT-4) (A) **S 88**
Reliability Assessment
Reliability Assessment of Advanced Coal-Fired Power Systems (81-JPGC-GT-1) (A) **D 94**
Reliability Design
A Reliability Design and Catastrophic Failure Model for Exhaust Systems (80-WA/Saf-1) (A) **Ja 103**
Reliability Research
Operational Safety and Reliability Research at EBR-II (81-JPGC-NE-11) (A) **N 110**
Remedial Action
Cleaning Up (ES) **Ap 28**
Reminiscences
Reminiscences of Los Alamos, 1943-1945 (Studies in

the History of Modern Science 5) (CB) Jl 93
Removal of CO_2
The Factors Influencing the Formation of Li_2CO_3 from LiOH and CO_2 (80-ENAs-45) (A) Mr 114
Renewable Energy
Energy from Biomass and Wastes (NB) Jl 79
Making Windpower an Important Part of a National Energy Plan (81-Pet-11) (A) My 89
Renewable Energy Sources
Expanded Socio-Technical Outlook Urged (C) Ap 55
Renewable Resources
Assessing Energy Strategies (ES) Je 24
Energy Sufficiency in 2030—At What Price? (NR) My 56
Focus on Solar Energy (IF) F 60
Renzo, P. C. Editor, Retiring (C) N 73
Repelling Screw Systems
An Extension of Screw Theory (80-DET-20) (A) F 119
Repowering
Repowering with Coal (81-JPGC-GT-9) (A) D 95
Republican Majority
What Will the New Year Bring? (WW) Ja 76
Research
Bio-Energy Research (EN) N 95
Earthquake Research (STV) F 71
KU-NASA Program Offers Research Incentives (EN) My 70
Management of Research and Innovation (Studies in the Management Sciences) (CB) S 90
Reflections on Mirror Fusion (C) O 50
Synthetic Fuels Center (EN) My 70
Research Awards
Ph.D. Science Research Programs (EN) N 94
Research and Development
R&D Funding Increased Slightly for '81 (NR) F 64
Technology Assessment: A Background Review (80-WA/Mgt-3) (A) Ja 102
Research Facility
Energy Farm (ES) Jl 18
New NDE Center (ES) Je 24
Research Grants
How to Apply for Engineering Foundation Research Grants (NR) O 76
Who's Eligible for Production Research Grants? (NR) Ap 75
Research Managers
Management Decision Methods for Managers of Engineering and Research (CB) Ap 108
Research Program
Graduate Research Program for Women (EN) Mr 82
NSF Expands Research Program for Small Firms (NR) F 63
Research Projects
A Method for Evaluating the Relative Worth of Research and Development Tasks to Prioritize Them (80-WA/Mgt-4) (A) Ja 103
1981 Research Directory (EN) S 73
Reservoirs
Computer Prediction of Local Destratification Near Low-Level Release Structures of Reservoirs (81-FE-11) (A) S 81
Hot Dry Rock Geothermal (ES) D 25
Residential Conservation Program
Energy Auditors Certification Program (NB) Ag 63
Residential Heating
Economic Analysis and Optimization of Solar Residential Space Heating (80-WA/Sol-11) (A) Ap 93
Residual Fuels
Low NO_x Combustion Systems for Burning Heavy Residual Fuels and High-Fuel-Bound Nitrogen Fuels (81-GT-109) (A) Je 113
Residual Stresses
Analytical Evaluation of Residual Stresses in Piping Subjected to Induction Heating Stress Improvement Process and Application to Operating Plants (81-PVP-19) (A) Ag 80
The Effects of Induction Heating Parameters on Controlling Residual Stress in Intermediate Size Pipes (81-PVP-31) (A) Ag 81
Hydraulically Expanded Tube to Tubesheet Joints (81-PVP-35) (A) Ag 82
Residual Stress Redistribution Caused by Notches and Cracks in a Partially Autofrettaged Tube (81-PVP-6) (A) Ag 79
Resistivity Modification
Predicting the Effect of Fly Ash Resistivity Modification on Precipitator Collection Efficiency (81-JPGC-Fu-3) (A) D 93
Resonant Excitation
Noise Due to Resonant Excitation of a Rotating Cylinder (81-DET-98) (A) N 106
Resource Management Systems
Estimating Reachability Boundaries for Resource Management Systems (80-WA/DSC-5) (A) Mr 114
Resource Recovery
Recovering the Energy in Wastes (STV) My 75
Resource Recovery Systems
Steel Can Cornucopia (ES) Jl 18
Resources
Resolving the Energy Quandary: Not Either/or But the Use of All Resources (NR) Ag 54
Tapping The Resources of a New 'Continent' Je 26
Resources of Technology
Energy Abundance Vs. Shortage (IF) F 60
Respiratory System
Engineering in Medicine and Biology (NR) Jl 70
Response Equipment Systems
Firefighters Integrated Response Equipment System, Phase II (81-ENAs-42) (A) O 101
Restricting Freedom
The Illusion of Absolute Freedom (C) Mr 65
Retainerless Bearings
Ball-Ball Load Carrying Capacity in Retainerless Angular-Contact Bearings (81-Lub-47) (A) D 99
Retirement
The Only True Retirement is That of the Heart . . . (NR) S 60
Retiring Editor
Letter from the Editor (C) Je 62
Retrieval Operations
Retrieving Space Shuttle's Rocket Boosters (BTR) Je 64
Retrieval Systems
Automated Storage/Retrieval Systems: A State-of-the-Art Update (80-WA/MH-4) (A) Ap 96
Retrofitting
Process Centrifugal Compressor Efficiency Improvement (80-WA/GT-2) (A) Ap 102
Retrofitting Utility Power Plants for Cogeneration Using Crossover Pressure Control (81-JPGC-Pwr-33) (A) D 93
Reuter, R. C., Jr. Torque Ripple in a Darrieus, Vertical Axis Wind Turbine (80-WA/Sol-13) (A) Ap 93
Revach, S. A Data Dependent Systems Approach to Dynamics of Surface Generation in Turning (80-WA/Prod-25) (A) My 83
Reverse Osmosis
Reverse Osmosis Desalination Plant (IF) Je 72
Reversible Pump-Turbine
ASME Landmarks Program (NR) N 87
Reversing Mechanisms
Kinematic Synthesis of Planar Two-Gear Drives With Prescribed Dwell Characteristics (81-DET-2) (A) O 103
Revitalization
Revitalizing America—An ASME Challenge and Opportunity (Ed) Jl 17
Rewetting
A Method for Determining Rewetting Velocity Under Generalized Boiling Conditions (80-WA/HT-40) (A) Ap 106
Reyes, J. N., Jr. Radiative Heat Transfer to High Pressure Steam (81-HT-69) (A) O 98
Reynolds, D. D. Analytical Modeling of Wave Interference Directional Microphones (80-WA/NC-6) (A) F 124
Reynolds Number
Effects of Size and Reynolds Number on Centrifugal Diffuser Performance (81-GT-8) (A) Je 105
Experimental Determination of Transition Reynolds Number for Unsteady Film Cooling (81-GT-94) (A) Je 111
Reysa, R. P. Application of Improved Technology to a Preprototype Vapor Compression Distillation (VCD) Water Recovery Subsystem (81-ENAs-10) (A) S 86
Rhodes, E. A Furnace Wall Ash Monitoring System for Coal Fired Boilers (80-WA/Fu-1) (A) F 127
Rhodes, F. T. Storm Over S-T View (C) Ja 51
Rice, I. G. Blading Heat Transfer Considerations in a Reheat-Gas-Turbine Combined Cycle (81-GT-155) (A) Jl 86; Comparison of the HTTT Reheat-Gas-Turbine Combined Cycle with the HTTT Nonreheat Gas-Turbine Combined Cycle (81-GT-69) (A) Je 109; The Reheat Gas Turbine with Steam-Blade Cooling—A Means of Increasing Reheat Pressure, Output and Combined Cycle Efficiency (81-GT-30) (A) Je 106
Rice, J. E. Atmospheric Monitoring for Submarine Applications (80-ENAs-33) (A) Mr 113
Rice, J. G. Numerical Computation of Swirling Gas-Particle Flows: Application to Pulverized Coal Classifiers (80-WA/HT-31) (A) Ap 105
Rice, W. B. Elections to Fellow Grade S 79
Rich, J. A Market Research Effort Leading to the Development of a High-Efficiency 10,000-shp Gas Turbine System (81-GT-190) (A) Jl 89
Richard, J. Influence of Restoring Torque Between Truck and Car-Body on the Transversal Stability of a Railway Car at Seven, Seventeen and Nine Degrees of Freedom (81-DET-41) (A) O 104
Richards, B. E. Short Duration Measurements of Heat Transfer Rate to a Gas Turbine Rotor Blade (81-GT-146) (A) Jl 85
Richards, E. J. Energy Input, Vibrational Level and Machinery Noise; Some Simple Relationships (81-DET-96) (A) N 106
Richardson, D. L. A Ten-Zone Thermal Manikin for Evaluating Personnel Protective Garments in Cold Air and Water Immersion Environments (80-WA/OCE-13) (A) Mr 116
Richardson, F. M. Transfer Thermography O 42
Richerson, D. W. Material, Design, and Test Aspects of Ceramic Component Development (81-GT-179) (A) Jl 88
Riches, M. R. The International Energy Agency's Program to Develop a Portable Meteorological Instrument Package for Solar Energy Applications (80-WA/Sol-27) (A) Ap 95
Richter, S. W. Recent Experience in Inservice Examinations (81-NE-1) (A) S 81
Ride Comfort
The Bumpy Ride Study (EN) Ja 73
Rienstra, S. W. On the Acoustical Implications of Vortex Shedding from an Exhaust Pipe (80-WA/NC-16) (A) F 125
Ries, J. P. Noise Due to Resonant Excitation of a Rotating Cylinder (81-DET-98) (A) N 106
Riess, H. L. Micrographic Application for Engineering Drawings (81-DET-107) (A) D 90
Riffel, R. E. Time-Variant Aerodynamics of High-Turning Blade Elements (81-GT-123) (A) Je 114
Rightness
On Determining Right and Wrong (C) O 51
Rigid Body Motion
The Cam-Link Mechanism: A General Overview and Specific Application to Rigid Body Motion (80-DET-15) (A) F 119
Rigid Inclusions
On the Influence of a Rigid Circular Inclusion on the Twisting and Shearing of a Shallow Spherical Shell (80-WA/APM-5) (A) Ja 99
Rigid Trucks
Analysis of Wheel Rail Force and Flange Force During Steady-State Curving of Rigid Trucks (81-RT-5) (A) Ag 76
Riley, C. R. Computer Aided Linkage Design Using the LINCAGES Package (81-DET-121) (A) D 92
Rindt, D. K. The Use of Additives to Reduce Ash Fouling Problems in Lignite-Fired Boilers (80-JPGC/Fu-3) (A) Ja 99
Ring-Stiffening
Point Admittance of Cylindrical Shells With and Without Ring-Stiffening (80-WA/NC-5) (A) F 124
Rinker, T. L. Regional Facilities for Hazardous Waste Disposal (80-WA/MH-13) (A) Ap 97
Rinkinen, W. An Experimental Study of Upper Hot Layer Stratification in Full-Scale Multiroom Fire Senarios (81-HT-9) (A) S 89
Rio, R. A. Improved Jet Engine Maintenance Through Automated Vibration Diagnostic Systems (81-GT-62) (A) Je 109
Riser Technology
Pondering Production Problems in the Deep Sea and Frozen Arctic (NR) N 86
Riser Tension
Development of an Instrumented Marine Riser Joint (81-Pet-25) (A) My 90
Risers
ASME Petroleum Conference, preview (NR) Jl 70

Rivin, E. I. Compilation and Compression of Mathematical Model for a Machine Transmission (80-DET-104) (A) **Mr 110**; Role of Induction Driving Motor in Transmission Dynamics (80-DET-96) (A) **Mr 110**

Road Casualties
Of Collisions and Cancer . . . (C) **Mr 64**

Road Vehicle Train
Road Vehicle Train Response to Random Road Surface Undulations (80-WA/DSC-1) (A) **Mr 114**

Roadbeds
Roadbeds from Waste Ashes (IF) **O 65**

Roberts, A. S., Jr. Analysis of Two-Phase Flow Solar Collectors with Application to Heat Pumps (80-WA/Sol-32) (A) **Ap 94**

Roberts, D. V. The Effect of Impeller Tip Design on the Performance of a Mixed Flow Turbocharger Compressor (81-GT-7) (A) **Je 104**

Roberts, P. B. Development of a Low-NO_x Lean Premixed Annular Combustor (81-GT-40) (A) **Je 106**

Roberts, W. E. Air-Film Cooling Returns to Ramjets (81-ENAs-8) (A) **S 86**

Robertson, A. S. Development and Operational Testing of a Heat Pipe Dry Cooling Tower (80-JPGC/Pwr-22) (A) **F 118**

Robertson, G. F. The Effect of Flow Maldistribution on the Thermal Response of Packed-Bed Converters and Thermal-Energy Storage Units (81-HT-59) (A) **O 98**

Robertson, J. Continuous Miner Noise (80-WA/NC-4) (A) **F 123**

Robin, T. T., Jr. Utility Experience with an Availability Improvement Program: Status and Current Direction (80-JPGC/Pwr-18) (A) **F 117**

Robleto, R. A. Cold Spring in an Existing Refinery (81-PVP-1) (A) **Ag 79**

Robolifts
Improving Conveyor Performance (IF) **S 58**

Robot Arms
Accessible Region and Synthesis of Robot Arms (80-DET-101) (A) **Mr 109**

Robot Hand
Determination of Extreme Distances of a Robot Hand—Part 1, A General Theory (80-DET-57) (A) **Mr 107**; Part 2, Robot Arms with Special Geometry (80-DET-58) (A) **Mr 106**

Robotic Arm
Motion Simulation of an Articulated Robotic Arm Subjected to Static Forces (80-DET-102) (A) **Mr 110**

Robotic Mechanisms
Control of Force Distribution in Robotic Mechanisms Containing Closed Kinematic Chains (80-WA/DSC-32) (A) **Mr 116**

Robotics
Much Ado About CAD/CAM and Robotics (NP) **S 68**
Robotics Institute (EN) **Mr 83**
Robotics in Practice: Management and Applications of Industrial Robots (CB) **D 102**

Robots
ASME Student Section News **Ap 84**
Robot Applications—the Engineer's Role? (NB) **S 70**
Robot System Assists in Nuclear Plant Repairs (BTR) **Ja 61**
Robot Technology (NB) **Ag 63**
Robotic Systems Course Draws Big Response (EN) **Je 91**
Robots and Manipulators **N 42**
Steel-Collar Worker (NB) **My 66**
The Year of the Robot (CB) **Jl 92**

Rocco, V. Error Analysis in Evaluating the Mechanical Efficiency of Reciprocating Internal Combustion Engines (81-DGP-10) (A) **My 88**

Rock, W. A. Liquid Custody Transfer Measurement Can be Accurate (81-Pet-26) (A) **My 90**

Rock Bits
Assessment of Bit Life Under Conditions of Rotary-Vibratory Drilling (81-Pet-15) (A) **My 89**

Rock Drills
Computer Design of Pneumatic Rock Drills and Mufflers (81-DET-99) (A) **D 91**

Rock Salt
Thermal Properties of Rock Salt and Quartz Monzonite to 573K and 50-MPa Confining Pressure (81-HT-51) (A) **O 95**

Rockbeds
Rockbeds for Comfort Cooling: An Assessment in Several U.S. Cities (80-WA/Sol-8) (A) **Ap 93**

Rocket Boosters
Retrieving Space Shuttle's Rocket Boosters (BTR) **Je 54**

Rockets
Rocket Testing Site (EN) **O 85**

Rockicki, G. J. Commercial Engine Logistics Cost Projections—A Dynamic and Flexible Approach (81-GT-114) (A) **Je 113**

Rocking Journal Bearings
Dynamic Analysis of Rocking Journal Bearings with Multiple Offset Segments (81-Lub-34) (A) **D 98**

Rocksalt
Stored Energy of Gamma-Irradiated 97 Percent Pure Rocksalt (80-WA/HT-53) (A) **Ap 106**

Rod Bundles
Heat Transfer Augmentation in Rod Bundles Near Grid Spacers (80-WA/HT-62) (A) **My 84**
Low Reynolds Number Forced Convection Steam Cooling Heat Transfer in Rod Bundles (80-WA/HT-59) (A) **My 84**

Rodgers, C. Gemini T-20 G-8 XM1 Tank APU (81-GT-81) (A) **Je 110**; A New APU for Medium Place Aircraft Environmental Control Systems (81-ENAs-1) (A) **S 85**

Rodgers, L. W. Low-Btu Gas From an Environmentally Clean Pellet Fuel (80-WA/Fu-2) (A) **F 126**

Rodriquez, J. Control of Bilinear System with an Optimal Aim Strategy (80-WA/DSC-43) (A) **Mr 117**

Roebelen, G. J., Jr. Development of a Preprototype Thermoelectric Integrated Membrane Evaporation Subsystem for Water Recovery (80-ENAs-46) (A) **Mr 114**

Roentgenographic Changes
The Classification of Spinal Column Deformities Resulting from Aircraft Ejection Forces (80-ENAs-44) (A) **Mr 113**

Roginski, T. Field Testing and Laboratory Evaluation of Corrosion Cracking of Rotor Steels (81-JPGC-Pwr-29) (A) **N 113**

Roller Bearings
Endurance Tests with Large-Bore Tapered-Roller Bearings to 2.2 Million DN (81-Lub-56) (A) **D 100**
Roller Skewing Behavior in Roller Bearings (81-Lub-45) (A) **D 99**

Roller Skewing
Kinematic Correction for Roller Skewing (80-DET-76) (A) **Mr 108**
Roller Skewing Behavior in Roller Bearings (81-Lub-45) (A) **D 99**

Rollers
Flange Loads Measurements in a Cylindrical Roller Bearing (81-Lub-18) (A) **D 97**

Rolling Contact
Effect of Grain Flow Orientation on Rolling Contact Fatigue Life of AISI M-50 (81-Lub-57) (A) **D 100**

Rolling Contact Bearings
Lubrication of a Cylinder on a Plane With a Non-Newtonian Fluid Considering Cavitation (81-Lub-2) (A) **D 95**

Rolling Contact Life
A Unified Model for Rolling Contact Life Prediction (81-Lub-42) (A) **D 99**

Rolling Contact Simulator
Regimes of Traction in Concentrated Contact Lubrication (81-Lub-18) (A) **D 96**

Rolling Element Bearings
Virginia Tech Engineers to Study Fretting Corrosion (EN) **Mr 83**

Rolsma, B. Noise Reduction in Heat Recovery Steam Generators (81-DET-101) (A) **D 91**

Rooke, J. H. Comparison of the Unbalance Response of Jeffcott Rotors with Shaft Bow and Shaft Runout (81-DET-47) (A) **D 89**

Rooney, D. M. The Effects of Roughness and Shear on Vortex Shedding Cell Lengths Behind a Circular Cylinder (81-FE-24) (A) **S 82**

Root Locus
The Spine of the Root Locus for the Viscous Damper (81-DET-4) (A) **O 102**

Root Profile
The Determination of the Lewis Form Factor and the AGMA Geometry Factor J for External Spur Gear Teeth (80-DET-59) (A) **Mr 106**

Ropes
Axial Response of Oval Wire Ropes (80-WA/OCE-3) (A) **Ap 97**
Selecting Domestic Wire Ropes for Metric Applications (BTR) **N 78**

Rosakis, A. J. Dynamic Fracture Initiation in Metals and Preliminary Results on the Method of Caustics for Crack Propagation Measurements (81-PVP-15) (A) **Ag 80**

Rose, E. LNG Cogeneration Power Station (80-JPGC/Pwr-11) (A) **F 117**

Rose, R. S. Application of Water Cooling for Improved Gas Turbine Fuel Flexibility and Availability (81-GT-68) (A) **Je 109**

Rosiczkoski, J. Arrays of Impinging Jets With Spent Fluid Removal Through Vent Holes on the Target Surface, Part 2: Local Heat Transfer (81-HT-76) (A) **O 99**

Ross, A. L. Storm Over S-T View (C) **Ja 52**

Ross, B. Failure Analysis Study of a Steam-Jacketed Pressure Vessel in Coffee Decaffeination Service (81-PVP-7) (A) **Ag 82**

Ross, F. D. Wear Prediction for Locomotive Wheels (81-RT-8) (A) **Ag 76**

Rossi, S. M. Comparison of Liquid Solar Thermal Storage Subsystems in the National Solar Data Network (80-WA/Sol-36) (A) **Ap 95**

Rossie, J. P. Retrofitting Utility Power Plants for Cogeneration Using Crossover Pressure Control (81-JPGC-Pwr-33) (A) **D 93**

Rotary Atomizer
A Development of the Fuel Atomizing Device Utilizing High Rotational Speed (81-GT-180) (A) **Jl 88**

Rotary-Vibratory Drilling
Assessment of Bit Life Under Conditions of Rotary-Vibratory Drilling (81-Pet-15) (A) **My 89**

Rotating Beams
Asymptotic Integration Methods Applied to Rotating Beams (80-WA/APM-32) (A) **Ja 102**

Rotating Blade Rows
Computation of Three-Dimensional Flow Fields Through Rotating Blade Rows and Comparison with Experiment (81-GT-121) (A) **Je 114**
A Quasi-Three-Dimensional Blade Surface Boundary Layer Analysis for Rotating Blade Rows (81-GT-126) (A) **Je 114**

Rotating Blades
Eigenfrequencies and Mode Shapes of a Free-Standing, Twisted, Tapered and Rotating Blade with Respect to an Elastically Supported Root (81-DET-125) (A) **N 108**
Rotating Blade Vibration Analysis Using Shells (81-GT-80) (A) **Je 110**

Rotating Channels
An Investigation of a Preswirled Cooling Airflow to a Turbine Disc by Measuring the Air Temperature in the Rotating Channels (81-GT-132) (A) **Jl 84**

Rotating Components
The Use of Multichannel Radio Telemetering Techniques for Stress and Temperature Measurements in Gas Turbine Rotating Components (81-GT-116) (A) **Je 112**

Rotating Compressible Flow
Rotating Compressible Flow Over the Edge of a Finite Disk (81-APM-19) (A) **S 84**

Rotating Cylinders
Noise Due to Resonant Excitation of a Rotating Cylinder (81-DET-96) (A) **N 106**

Rotating Disks
Drag-Characterization Method for Arbitrarily Rough Surfaces by Means of Rotating Disks (81-FE-33) (A) **S 83**
The Effect of Inertia on Flow Between Misaligned Rotating Disks (80-WA/FE-2) (A) **My 85**

Rotating Ducts
Flow Prediction in Rotating Ducts Using Coriolis-Modified Turbulence Models (80-WA/FE-1) (A) **My 85**

Rotating Machinery
Detection and Early Diagnosis of Potential Failures of Rotating Machinery (81-JPGC-Pwr-28) (A) **N 113**

Rotating Machines
Method of Determining Locations of Unbalances in Rotating Machines (81-DET-12) (A) **D 88**

Rotating Shafts
The Balancing of Rotating Shafts by Quadratic Programming (80-DET-45) (A) **F 121**

A Direct Integration Technique for the Transient Analysis of Rotating Shafts (81-DET-56) (A) **D 89**

Rotation

Interferometer Accurately Measures Rotation Angle (BTR) **N 77**

Rotation Rate

Astronomers Estimate Neptune's Rotation (BTR) **D 81**

Rotatory Inertia

Large Amplitude Elliptical Plate Vibration With Transverse Shear and Rotatory Inertia Effects (81-DET-66) (A) **N 106**

Nonlinear Vibration of Layered Composite Plates Including Transverse Shear and Rotatory Inertia (81-DET-144) (A) **D 91**

Roth, B. The Curvature Theory of Line Trajectories in Spatial Kinematics (80-DET-18) (A) **F 119;** Design Considerations for Manipulator Workspace (81-DET-79) (A) **D 90;** An Extension of Screw-Theory (80-DET-20) (A) **F 119;** Instantaneous Kinematics of Multiple-Degree-of-Freedom Motions (80-DET-53) (A) **Mr 106;** Instantaneous Properties of Trajectories Generated by Planar, Spherical, and Spatial Rigid Body Motions (80-DET-19) (A) **F 119;** Kinematic Mappings Part 1: Classification of Algebraic Motions in the Plane (80-DET-16) (A) **F 119;** Part 2: Rational Algebraic Motions in the Plane (80-DET-17) (A) **F 119**

Roth, E. P. Measurement of the Enthalpy and Specific Heat of a Be_2C-Graphite-UC_2 Reactor Fuel Material to 1980 K (80-WA/HT-54) (A) **My 84**

Rothrock, M. D. Time-Variant Aerodynamics of High-Turning Blade Elements (81-GT-123) (A) **Je 114**

Rotor Bearing Systems

An Appraisal of Schroeder-Phased Harmonic Signals for Bearing Identification (80-WA/DSC-34) (A) **Mr 116**

Dynamics of Rotor Bearing Systems Supported by Floating Ring Bearings (81-Lub-37) (A) **D 98**

Freed Pump Vibration Research—Interstage Fluid Annuli (80-JPGC/Pwr-20) (A) **F 117**

A Numerical Approach to the Stability of Rotor-Bearing Systems (81-DET-61) (A) **D 90**

Optimum Bearing-Support Damping for Rotor-Bearing Systems for Maximum Stable Operating Speed Range (81-DET-69) (A) **O 104**

Transient Analysis of Rotor-Bearing Systems Using Component Mode Synthesis (81-GT-110) (A) **Je 112**

Transverse Vibrations of a General Cracked-Rotor Bearing System (81-DET-45) (A) **D 89**

Rotor Bearings

Iterative Determination of Squeeze Film Damper Eccentricity for Flexible Rotor Systems (81-DET-87) (A) **D 90**

Rotor Blades

Rotor Blade Tip Grinder (IF) **O 64**

Short Duration Measurements of Heat Transfer Rate to a Gas Turbine Rotor Blade (81-GT-146) (A) **Jl 85**

Rotor Exchange

Upgrading Old Generators (BTR) **Je 65**

Rotor Failure

The Venting Characteristics of a Fibrous Thermal Barrier System During a Rapid Depressurization Accident (Rotor Failure) in an HTGR-GT (81-GT-14) (A) **Je 105**

Rotor Lifting

Stability Analysis of Rotor Lifting Arrangement (80-WA/DE-10) (A) **Ap 98**

Rotor Steels

Field Testing and Laboratory Evaluation of Corrosion Cracking of Rotor Steels (81-JPGC-Pwr-29) (A) **N 113**

Rotor Systems

Component Mode Synthesis of Large Rotor Systems (81-GT-147) (A) **Jl 85**

Rotor Unbalance

Optimum Journal Bearing Parameters for Minimum Rotor Unbalance Response in Synchronous Whirl (81-DET-55) (A) **N 105**

Rotor Wake

Interaction of Compressor Rotor Blade Wake with Wall Boundary Layer/Vortex in the End-Wall Region (81-Gr/GT-1) (A) **O 101**

Rotor Wake Mixing Effects Downstream of a Compressor Rotor (81-GT-98) (A) **Je 111**

Rotordynamics

Experimental Research on the Hydraulic Excitation Force on the Pump Shaft (81-DET-71) (A) **O 104**

Rotors

An Aerothermodynamic Analysis of Transonic Compressor Rotors Containing Three-Dimensional Shocks (81-GT-120) (A) **Je 114**

Application of the Principle of Reciprocity to Flexible Rotor Balancing (81-DET-49) (A) **N 105**

Development and Testing of a Ceramic Turbocharger Rotor (81-GT-195) (A) **Jl 89**

A Direct Integration Technique for the Transient Analysis of Rotating Shafts (81-DET-56) (A) **D 89**

Early Detection of Cross-Sectional Rotor Cracks by Turbine Shaft Vibration Monitoring Techniques (81-JPGC-Pwr-26) (A) **N 112**

Experience with Large Heavy-Duty Gas Turbine Rotors (81-GT-181) (A) **Jl 88**

Fractional-Frequency Rotor Motion Due to Non-symmetric Clearance Effects (81-GT-145) (A) **Jl 84**

Instability of Rotors in Fluid Film Bearings (81-DE-6) (A) **Ag 78**

An Investigation of Axial Compressor Rotor Aerodynamics (81-GT-56) (A) **Je 108**

A Note on Critical-Speed Solutions for Finite-Element-Based Rotor Models (81-DET-50) (A) **N 105**

Passage of a Rotor Through a Critical Speed (81-DET-58) (A) **N 105**

Rotor-Tip Leakage: Part 1—Basic Methodology (81-GT-71) (A) **Je 110;** Part II—Design Optimization Through Viscous Analysis and Experiment (81-GT-72) (A) **Je 110**

A System to Measure the Response of a High-Speed Rotor to a Sudden Imbalance (81-GT-117) (A) **Je 113**

Vibrations of an Elastically Mounted Spinning Rotor Partially Filled with Liquid (81-DET-54) (A) **D 89**

Rough Ground

Nonstationary Response of Vehicles on Rough Gound—A State Space Approach (80-WA/DSC-22) (A) **Mr 116**

Rough Surfaces

Drag-Characterization Method for Arbitrarily Rough Surfaces by Means of Rotating Disks (81-FE-33) (A) **S 83**

Roughness

A Method to Measure Contact Pressure between Metallic Surfaces by Changes in Surfaces Roughness (80-WA/Prod-18) (A) **My 83**

Roughness Characteristics

Roughness Characteristics of Plane Surfaces Based on Velocity Similarity Laws (81-FE-34) (A) **S 83**

Roughness Element

Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (80-WA/FE-9) (A) **My 86**

Roughness Function

Analysis of the Roughness Function and Wall Law Slope for Rough Surface Turbulent Boundary Layers (81-FE-36) (A) **S 83**

Round Buoyant Jet

Analytical Model of the Round Buoyant Jet (81-FE-10) (A) **S 81**

Round Jet

A Round Jet Normal to a Cross-Flow (80-WA/FE-10) (A) **My 86**

Roy, G. D. On Heat Balance in Coal-Fired MHD Systems, Channel Heat Transfer and Electrode Temperature Distribution (80-WA/HT-11) (A) **Ap 103**

Royce, L. System Analysis Approach to Energy Conservation in Cooling Tower—Central Chiller Plant Systems (80-ENAs-3) (A) **Mr 111**

Rozeanu, L. The Morphology of Surface Damage Caused by Friction (81-Lub-14) (A) **D 97**

Rub Energy

Single Pass Rub Phenomena—Analysis and Experiment (81-Lub-55) (A) **D 100**

Rubber Lining

Rubber Lined Pipelines—An Overview (80-WA/MH-8) (A) **Ap 96**

Rubber Staves

The Effects of Friction Between Cylinders and Rubber Staves of Finite Thickness (81-Lub-30) (A) **D 98**

Rubbing

The Hammer QSD-Quick Stop Device for High-Speed Machining and Rubbing (A) **My 82**

Rucigay, J. C. MS9001E—A New 100-MW Gas Turbine (81-GT-31) (A) **Je 106**

Rudek, F. P. O_2 Sensing for Environmental Control and Monitoring Systems (80-ENAs-41) (A) **Mr 113**

Rudloff, F. A. Evaluation of a Helical Flow Recuperator (81-HT-25) (A) **O 95**

Rudzki, J. E. On-Site Quality Control of Insolation Measurements (80-WA/Sol-25) (A) **Ap 94**

Ruiz, C. On the Buckling Design of Spherical Shells (81-PVP-32) (A) **Ag 81**

Runchal, A. An Equivalent Continuum Model for Fluid Flow, Heat and Mass Transport in Geologic Materials (81-HT-54) (A) **O 96**

Rungta, R. Fatigue and Fracture Analysis of Two Turbine Shafts (81-PVP-27) (A) **Ag 81**

Runner Blades

Experimental Investigation on the Vibratory Characteristics of an Industrial Steam Turbine LP-Runner Blade With Lacing-Wire (81-DET-134) (A) **N 108**

Rupture

Dynamic Analysis of Rupture in Thin Fluid Films. 1—A Noninertial Theory (81-Lub-24) (A) **D 98**

Rural Electrification Administration

Rural Energy Needs (ES) **Mr 37**

Rusnica, E. J. Spurious Opening of Hydraulic-Assisted, Pilot-Operated Valves—an Investigation of the Phenomenon (81-PVP-39) (A) **Ag 82**

Russell, C. B. Sampling for Confidence Interval Estimation of the Fiber Shape Factor (80-Tex-5) (A) **F 122**

Russell, L. D. Modeling and Analysis of an All-Fiberglass Flat Plate Solar Collector (80-WA/Sol-4) (A) **Ap 92**

Russell, L. M. Evaluation of a Method for Heat Transfer Measurements and Thermal Visualization Using a Composite of a Heater Element and Liquid Crystals (81-GT-93) (A) **Je 112**

Russell, P. L. Evaluation of Concepts for Controlling Exhaust Emissions from Minimally Processed Petroleum and Synthetic Fuels (81-GT-157) (A) **Jl 86**

Russo, C. J. Effects of Size and Reynolds Number on Centrifugal Diffuser Performance (81-GT-8) (A) **Je 105**

Russon, V. K. Computer Aided Design of Disk Cams from Numerical Follower Motion Data (80-WA/DSC-9) (A) **Mr 115**

Ruston Tornado

The Ruston Tornado—A 6-MW Gas Turbine for Industrial Application (81-GT-171) (A) **Jl 87**

Rybicki, E. F. The Effects of Induction Heating Parameters on Controlling Residual Stress in Intermediate Size Pipes (81-PVP-31) (A) **Ag 81**

Rylander, H. G. Analysis of Defective Hydrostatic Radial Bearings for 5-MJ Homopolar Generator (80-WA/DE-14) (A) **Ap 101**

S

Saalfeld, F. E. Atmospheric Monitoring in Submersibles (80-ENAs-31) (A) **Mr 113**

Saba, M. P. The Cabin Air Conditioning and Temperature Control System for the Boeing 767 and 757 Airplanes (80-ENAs-5) (A) **Mr 110**

Sabatier CO_2 Reduction Subsystem

Development of an Advanced Sabatier CO_2 Reduction Subsystem (81-ENAs-11) (A) **S 86**

Sabbaghian, M. Optimum Design and Creep Relaxation of Dissimilar-Material Multilayer Shrink Fitted Vessels (81-PVP-30) (A) **Ag 81**

Sabia, P. E. Design and Development of the Combustor Inlet Diffuser for the NASA/GE Energy Efficient Engine (81-GT-129) (A) **Jl 84**

Sabotage

How Can We Prevent Nuclear Sabotage? (C) **D 56**

Sackett, J. I. Operational Safety and Reliability Research at EBR-II (81-JPGC-NE-11) (A) **N 110**

Sadek, M. M. Effects of Process Parameters on Hammer Noise (81-DET-95) (A) **N 106;** Mathematical Modelling for Predicting Effects of Structural Changes in Machine Tools (81-DET-39) (A) **O 104;** Squeeze Film Die Support as a Means of Noise Reduction in Forging Machines (81-DET-97) (A) **D 90**

Sadek, R. M. Refrigerating Gas Turbine Compressor Air Intake (81-GT-176) (A) **JI 88**
Sadler, J. P. A New Solution to Coulomb Friction in Mechanism Bearings: Theory and Application (80-DET-52) (A) **Mr 106**
Safe Energy Production
At the JPGC: Environmentally Safe Energy Production (NR) **D 68**
Safety
Of Collisions and Cancer . . . (C) **Mr 64**
Operational Safety at the FFTF (81-JPGC-NE-6) (A) **N 109**
Some Engineering Criteria for Determining Design Defects (80-WA/DE-16) (A) **Ap 101**
Safety Controls
Eliminating Human Error (ES) **N 71**
Safety Engineering
A Reliability Design and Catastrophic Failure Model for Exhaust Systems (80-WA/Saf-1) (A) **Ja 103**
Safety in Nuclear Power
The Future of Nuclear Power in the U.S. **F 26**
Safety Relief Valves
Pressure Relief Valve Noise Attenuation (81-PVP-38) (A) **Ag 82**
Safety Relief Valve Discharge Downcomer Transients for a BWR (81-FE-27) (A) **S 82**
Safety Valves
Design of Spring Loaded Safety Valves (81-PVP-40) (A) **Ag 82**
PWR S/RV Line Qualification to Gas Discharge Conditions (81-PVP-41) (A) **Ag 82**
Saha, P. A Nonequilibrium Vapor Generation Model for Flashing Flows (81-HT-84) (A) **O 99**
Sahinkaya, M. N. Frequency-Domain Estimation of Linearized Oil-Film Coefficients (81-Lub-7) (A) **D 96**
Sailors, R. H. Presentation of Failure Analysis Data by the Fatigue Fracture Mechanics Diagram (81-PVP-11) (A) **Ag 80**
Saito, S. Balancing of Flexible Rotors by the Complex Modal Method (81-DET-46) (A) **D 89;** An Experiment on Pump Pressure Fluctuation, Vibration and Air Borne Noise Caused by Cavitation (81-DET-94) (A) **N 106**
Salaries
Best Bargain Around: Engineers (C) **S 49**
Engineers' Salaries (C) **My 43**
Engineers' Salaries—An Update **Mr 40**
Salary Hikes Reported for Consulting Engineers (NB) **D 78**
Sales Engineers
Help Wanted: "Sales Engineers" (NB) **N 90**
Salinas, G. A. Life Sciences Experiments on Spacelab 1 (80-ENAs-36) (A) **Mr 113; Je 50**
Salkeld, R. *(editor)* Space Transportation Systems (AIAA Aerospace Assessment Series, Vol. 1) (CB) **Ja 104**
Salmon Stocks
Researchers Study Effects of Acid Rain on Marine Life (NR) **N 85**
Salt-Gradient Solar Ponds
The Solar Alternative: Status and Prospects (NR) **JI 62**
Saltwater Jets
An Experimental Investigation of Merging Buoyant Jets in a Crossflow (80-WA/HT-23) (A) **Ap 105**
Samaha, M. Suspension Bounce Response of Canadian Maglev Vehicle Under Guideway Excitations, Part I: Deterministic Analysis (81-DET-81) (A) **D 90;** Part II: Stochastic Modeling and Analysis (81-DET-82) (A) **D 90**
Samaha, M. A. Experiments on the Dynamic Behavior of a Supercritical Rotor (81-DET-59) (A) **D 89**
Samonov, C. Computer-Aided Design of Helical Compression Springs: Statically Loaded Springs of Round Wire with Residual Stresses Induced by Presetting Operation (80-DET-69) (A) **Mr 107**
Samplers
Pollution-Measuring Devices to Assess Indoor Air (NR) **Je 81**
Samra, R. S. Safety Relief Valve Discharge Downcomer Transients for a BWR (81-FE-27) (A) **S 82**
Samulesen, G. S. An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) (A) **Je 106**
Samurin, N. A. Equivalent Performance Testing of Multisection Compressors (81-GT-150) (A) **JI 86**
Sand
Dust and Sand Protection for Marine Gas Turbines (81-GT-74) (A) **Je 110**
Reducing Earthquake Hazards (NB) **Ap 80**
Sand Dunes
On Wind-Tunnel Simulation of Desert Atmospheric Conditions for Sand Dune Studies (81-FE-8) (A) **Ag 83**
Sander, D. M. A Simplified Computer-Assisted Energy Calculation Procedure for the Evaluation of Building Architectural Concepts (80-WA/DSC-42) (A) **Mr 117**
Sanders, J. L., Jr. Elections to Fellow Grade **Ja 95**
Sanders, M. S. Personal Equipment Development for Use in Underground Mining (81-ENAs-48) (A) **O 101**
Sanders, R. The Motion Compensation Deck Handling System for the Remote Unmanned Work Systems (80-WA/OCE-11) (A) **Ap 97**
Sandor, G. N. New Complex-Number Form of the Cubic of Stationary Curvature in a Computer-Oriented Treatment of Planar Path-Curvature Theory for Higher-Pair Rolling Contact (80-DET-90) (A) **Mr 109;** New Complex-Number Forms of the Euler-Savary Equation in a Computer-Oriented Treatment of Planar Path-Curvature Theory of Higher-Pair Rolling Contact (80-DET-89) (A) **Mr 109**
Sandwich Beams
Vibration Analysis of a Flexible System Mounted on a Viscoelastic Sandwich Beam (81-DET-64) (A) **N 106**
Sandwich Panels
Response of Sandwich Panels with Viscoelastic Core Under Random Excitation at a Point (81-DET-43) (A) **O 104**
Sankar, S. Computer-Aided Analysis and Experimental Verification of a Motorcycle Suspension (81-DET-84) (A) **D 90;** Fail-Safe Vibration Control Using Active Force Generators (81-DET-85) (A) **N 106;** General Gear Diameter Equations for the Synthesis of Multi-Speed Gear Trains (81-DET-117) (A) **D 92;** Hybrid Computer-Aided Design of a Hydrostatic Vehicle Drive with Energy Accumulator (80-DET-49) (A) **F 121**
Sankar, T. S. Dynamic Behavior of a Moving Belt Supported on Elastic Foundation (80-DET-55) (A) **Mr 106;** On the Dynamic Gear Tooth Loading as Affected by Bearing Clearances in High-Speed Machinery (81-DET-112) (A) **D 91;** Finite Journal Bearing with Nonlinear Stiffness and Damping. Part 1: Improved Mathematical Models (81-DET-51) (A) **D 89;** Part 2: Stability Analysis (81-DET-52) (A) **N 105;** Optimum Journal Bearing Parameters for Minimum Rotor Unbalance Response in Synchronous Whirl (81-DET-55) (A) **N 105;** On the Prediction of Journal-Bearing Separation in High Speed Mechanisms with Clearances (80-WA/DSC-36) (A) **Mr 117;** Suspension Bounce Response of Canadian Maglev Vehicle Under Guideway Excitations, Part I: Deterministic Analysis (81-DET-81) (A) **D 90;** Part II: Stochastic Modeling and Analysis (81-DET-82) (A) **D 90**
Sanker, T. S. An Approach for Dynamic Analysis of Mechanical Systems with Multiple Clearances Using Lagrangian Mechanics (81-DET-3) (A) **O 102**
Sarathy, K. P. Computation of Three-Dimensional Flow Fields Through Rotating Blade Rows and Comparison with Experiment (81-GT-121) (A) **Je 114**
Sarmiento, G. S. Evaluation of Eigenvalues in Regions of Complicated Boundary Shape in Problems Governed by Helmholtz Equation (81-DET-76) (A) **O 105**
Sartor, J. D. Contingency Planning for Liquid Pipeline Spills (81-Pet-12) (A) **My 89**
Sartwell, B. D. Wear and Friction of Nitrogen Ion Implanted Steel (81-Lub-20) (A) **D 97**
Sataka, M. Stress Analysis of a Penny-Shaped Crack Located Between Two Spherical Cavities in an Infinite Solid (80-WA/APM-12) (A) **Ja 100**
Sataloff, J. Industrial Noise Pollution—Part 4: An Effective Hearing Conservation Program **O 31**
Sataloff, R. T. Industrial Noise Pollution—Part 4: An Effective Hearing Conservation Program **O 31**
Satellite Service
EVA Equipment for Satellite Service (80-ENAs-48) (A) **Mr 114**
Satellites
Consensus of Scientists on SPS: Too Costly (BTR) **O 52**
EVA Equipment for Satellite Service **Je 40**
NASA Detects Changes in Sun's Energy Output (BTR) **Ja 58**
Sathyamoorthy, M. Large Amplitude Elliptical Plate Vibration With Transverse Shear and Rotatory Inertia Effects (81-DET-66) (A) **N 106**
Satija, S. Release Rate Model for Developing Fires (81-HT-4) (A) **S 88**
Sato, K. Method of Determining Locations of Unbalances in Rotating Machines (81-DET-12) (A) **D 88**
Satoh, K. A Study on Creep Behavior Evaluation for Welded Joint in High Temperature Structure Design (81-PVP-36) (A) **Ag 82**
Satoh, K. A Study on Creep Behavior Evaluation for Welded Joint in High Temperature Structure Design (81-PVP-36) (A) **Ag 82**
Saturated Porous Medium
A Study of Non-Darcy Natural Convection from a Vertical Heated Surface in a Saturated Porous Medium (81-HT-45) (A) **O 97**
Saturated Steam
Calculation of the Theoretical Critical Flow Rate of Saturated Steam (80-WA/PTC-3) (A) **Ap 101**
Sauer, R. L. Advanced Microbial Check Valve Development (81-ENAs-45) (A) **S 88**
Savage, M. Kinematic Correction for Roller Skewing (80-DET-76) (A) **Mr 108;** Optimal Tooth Numbers for Compact Standard Spur Gear Sets (81-DET-115) (A) **D 92**
Sax, M. J. Statistical Properties of the Surface Pressure Distribution on a Yawed Cylinder in a Turbulent Flow Field (81-DET-35) (A) **O 103**
Saxton, M. J. Predicted Burning Times of Nonporous Coal Particles as a Function of Pressure and Particle Size (80-WA/Fu-5) (A) **F 127**
Scalar Variance
Theoretical Investigation of the Decay of Scalar Variance Injected into Homogeneous Turbulence (81-FE-31) (A) **S 83**
Scaling
Application of Scaling in Afterburner Test and Development (81-GT-194) (A) **JI 89**
Scalzo, A. J. The Westinghouse 501D Combustion Turbine Engine (81-GT-32) (A) **Je 106**
Scanners
CT-Scanned Combustion (BTR) **Je 66**
Scardino, F. Development of Multi-Bar Weft-Insert Warp Knit Glass Fabrics for Industrial Applications (80-Tex-7) (A) **F 123**
Scarton, H. A. Energy Efficient Muffler for Reduction of Exhaust Noise Generated by a Pneumatic Grinder (80-WA/NC-9) (A) **F 124;** Experimental Investigation into the Physics of Arc-Air Metal Gouging Noise Generation (80-WA/NC-12) (A) **F 124;** Sources of Noise Produced During Pneumatic Chipping Hammer Operation (80-WA/NC-11) (A) **F 124**
Scattering Components
Scattering Band Absorption for a Planar Medium (81-HT-61) (A) **O 98**
Scavuzzo, S. A. Boiler Heat Transfer Model for Operator Diagnostic Information (81-JPGC-Pwr-14) (A) **N 111**
Schade, R. Probabilistic Models in Computer Automated Slider-Crank Function Generator Design (80-DET-46) (A) **F 121**
Schajer, G. S. Circular Saw Vibration Control by Induction of Thermal Membrane Stresses (80-WA/Prod-8) (A) **My 82**
Schatz Mechanism
On Attempting to Reduce Undesirable Inertial Characteristics of the Schatz Mechanism (80-DET-79) (A) **Mr 108**
Schatzmann, M. The Effects of Bed Friction on Lateral Mixing in Open Channel Flow (81-FE-9) (A) **S 81**
Schaub, F. S. Emission Reduction by Combustion Modification in Two Stroke Spark Ignited Gas Engines and by Catalytic Conversion (81-DGP-7) (A) **My 87**

Scheduling
The Role of Planning and Scheduling: Construction vs. Startup for Commercial Power Stations (81-JPGC-Pwr-12) (A) **N 111**
Scheffel, H. The Development of an Optimum Wheel Profile for Self-Steering Trucks Under Heavy Axle Load Conditions (80-WA/RT-5) (A) **F 125**
Schike, P. W. Water-Cooled Gas Turbine Forged Bucket Development (81-GT-174) (A) **JI 88**
Schilke, P. W. Water-Cooled Gas Turbine Monometallic Nozzle Fabrication and Testing (81-GT-162) (A) **JI 87**
Schiller, S. R. Dynamic Modeling and Experimental Simulation of Active Solar Energy Systems for the Evaluation of Control Strategies (80-WA/Sol-14) (A) **Ap 93**
Schimmel, W. Carbon/Carbon Components for Advanced Gas Turbine Engines (81-GT-35) (A) **Je 107**
Schindwolf, R. Frequency Response Analysis of Fluid Control Systems for Parabolic-Trough Solar Collectors (80-WA/Sol-15) (A) **Ap 93**
Schlieren Device
A Study of Valve Noise Generation Processes for Compressible Fluids (80-WA/NC-15) (A) **F 125**
Schlinker, R. H. Boundary Layer Development on Turbine Airfoil Suction Surfaces (81-GT-204) (A) **JI 90**; Development of a Large-Scale Wind Tunnel for the Simulation of Turbomachinery Airfoil Boundary Layers (81-GT-6) (A) **Je 104**
Schlosser, A. A Waste Energy Power Generation Concept—The Plumemill (80-JPGC/Pwr-9) (A) **F 116**
Schmidt, F. W. A. *(author)* Thermal Energy Storage and Regeneration (CB) **Ag 85**
Schmoch, O. R. Experience with Large Heavy-Duty Gas Turbine Rotors (81-GT-181) (A) **JI 88**
Schoenhals, R. J. An Experimental Study of a Closed Two-Phase Thermosyphon for Ice Production (81-HT-16) (A) **O 94**
Schofield, W. H. Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (80-WA/FE-9) (A) **My 86**
Scholarships
NSPE Program Awards 122 Scholarships (EN) **JI 74**
Scholarships for Careers in Nuclear Engineering (EN) **D 79**
Schreiber, H. Methanol Combustion in a 26-MW Gas Turbine (81-GT-64) (A) **Je 109**
Schroeder, N. Keeping America Free (C) **S 49**
Schubert, F. H. Oxygen Generation Subsystem for Spacecraft (81-ENAs-40) (A) **S 86**; Preprototype Vapor Compression Distillation Subsystem Development (81-ENAs-25) (A) **S 87**
Schubert, W. W. Unconventional Processes for Food Regeneration in Space: An Overview (81-ENAs-35) (A) **S 87**
Schubet, F. H. Regenerable CO_2 Collection for Spacecraft Application (81-ENAs-28) (A) **O 101**
Schultz, L. A. Brine Channel Enlargement in Sea Ice During Spring Thaw (80-WA/HT-18) (A) **Ap 104**
Schutze, F. W. Progress in Railway Mechanical Engineering (1979-1980 Report of Survey Committee)—Locomotives (80-WA/RT-12) (A) **F 126**
Schuster, D. J. Computer Standards: The Need and the Challenge **F 40**
Schwartz, P. Tensile Properties of Triaxially Woven Fabrics Under Biaxial Loading (80-Tex-3) (A) **F 122**
Schwartzkopf, H. A Chamber Design for Closed Ecological Systems Research (81-ENAs-27) (A) **O 100**
Schwertz, N. Rockbeds for Comfort Cooling: An Assessment in Several U.S. Cities (80-WA/Sol-8) (A) **Ap 93**
Sciammarella, C. A. Analysis of Cyclic Thermal and Residual Stresses in CH36 Wheels Under Series of Severe Drag Braking (81-RT-10) (A) **Ag 76**
Science
Black Americans in Technology (STV) **Ap 87**
McGraw-Hill Yearbook of Science and Technology—1980 (CB) **Mr 119**
Technology for the Handicapped (NB) **JI 79**
Science Adviser
A Perspective on the Presidency (WW) **Ap 86**
Science Education
Beyond the Classroom (C) **Mr 86**
Science Education Programs
NAS Members Concerned Over Budget Slashes (EN) **JI 74**
Science Research
Ph.D. Science Research Programs (EN) **N 94**
Scientific Coinages
Origin of Boojum (BTR) **Ag 45**
Scientific Developments
America's Technology Slip (CB) **Je 116**
Scientific Literature
Japanese Scientific and Technical Literature: A Subject Guide (CB) **N 115**
Scientific Research
Material Science Center Opens (NB) **D 78**
Scientific Societies
CESSE Surveys Metrication (NB) **Je 90**
Scientists
NASA-AMES Life Sciences Flight Experiments Program—1980 Status Report (80-ENAs-34) (A) **Mr 113**
Precision Measurement Grants (EN) **N 94**
Scotch Yoke Mechanism
Analysis of Drive Shaft Speed Variations in a Scotch Yoke Mechanism (80-DET-92) (A) **Mr 109**
Scott, D. A. Hydraulically Expanded Tube to Tubesheet Joints (81-PVP-35) (A) **Ag 82**
Scott, F. M. Elections to Fellow Grade **S 79**
Screw Systems
An Extension of Screw Theory (80-DET-20) (A) **F 119**
Screwdrivers
Optic Fiber Screwdriver (IF) **Mr 77**
Scrubbers
Indiana Tests a Scrubber (ES) **Ag 20**
Sea, R. At-Sea Evaluation of a Ram Tensioner for Ocean Deployment and Recovery (80-WA/OCE-5) (A) **Ap 97**
Sea Ice
Brine Channel Enlargement in Sea Ice During Spring Thaw (80-WA/HT-18) (A) **Ap 104**
Oil Spill Countermeasures for Canada's Ice-Infested Waters (81-Pet-24) (A) **My 90**
A Simple Model of Seasonal Sea Ice Growth (80-WA/HT-20) (A) **Ap 104**
Sea-Cure Condenser Tubing
The Development of Sea-Cure Condenser Tubing (Crucible SC-1) (81-JPGC-Pwr-3) (A) **N 111**
Sea Waves
Linear Prediction Theory for Digital Simulation of Sea Waves (81-Pet-7) (A) **My 89**
Seafloor Earthquake Measurement System
Recovering Offshore Oil, Gas (BTR) **S 54**
Seal Geometries
Design and Testing of a New Double Labyrinth Seal (81-Lub-58) (A) **D 99**
Seal Oil Systems
Contamination of Centrifugal Process Gas Compressor Lube Oil and Seal Oil Systems by Hydrocarbon Condensate (81-GT-182) (A) **JI 89**
Seal Rings
A Study of Thermal Behavior of Large Seal-Ring (81-Lub-27) (A) **D 97**
Sealing Systems
Evaluation of Sealing Systems for Nonflammable Aircraft Hydraulic Fluids (81-Lub-51) (A) **D 99**
Seals
Dynamic Analysis of Noncontacting Face Seals (81-Lub-10) (A) **D 96**
Plus ça change, plus c'est la même seal (C) **Ja 49**
Seamless Pipe
Computer Control for Seamless Pipe (IF) **Ag 51**
Seamless Tubes
Oil Drilling Tubes (IF) **O 64**
Seat Acceleration
The Bumpy Ride Study (EN) **Ja 73**
Seawater
Putting Seawater to Work (ES) **Ap 28**
Reverse Osmosis Desalination Plant (IF) **Je 72**
Seawater Evacuation System
Driver-Steadying Device (BTR) **F 54**
Seban, R. A. Predictions of Drop Models for the Dispersed Flow Downstream of the Quench Front in Tube Reflood Experiments (80-WA/HT-47) (A) **Ap 106**
Second Degree Polynomial
A Quick Method for Testing if a Second Degree Polynomial Has Solutions in a Given Box (81-DET-118) (A) **N 108**
Secondary Barrier
Infrared Thermography (BTR) **F 54**
Secondary Flow
Secondary Flow Structure in Combined Free and Forced Convection in a Horizontal Isothermal Tube (81-HT-36) (A) **O 96**
Study of Secondary Flows in Blade Cascades of Turbomachines (81-Gr/GT-4) (A) **O 102**
Secord, J. R. Development and Testing of a Ceramic Turbocharger Rotor (81-GT-195) (A) **JI 89**
Security Interests
Technology Transfer, Innovation and International Competitiveness (CB) **S 90**
Seeing Machines
Seeing Machines: Current Industrial Applications **N 52**
Seeker, W. R. Bench Scale Testing of Low-NO_x LBG Combustors (81-GT-59) (A) **Je 109**
Seeman, S. E. Operational Safety at the FFTF (81-JPGC-NE-6) (A) **N 109**
Sefcik, A. J. Editor, Retiring (C) **N 72**
Seglem, C. E. Elections to Fellow Grade **Je 102**
Segmented Slug Damper
A Comparative Study of the Lanchester Damper and the Segmented Slug Damper in Boring Bar Applications (81-DET-90) (A) **O 105**
Sehgal, B. R. Role of Advanced Reactors in Electricity Generation (80-WA/NE-7) (A) **Ja 97**
Seidel, B. R. Operational Safety and Reliability Research at EBR-II (81-JPGC-NE-11) (A) **N 110**
Seifert, J. Wind: A Power Source for Forklift Trucks **Ja 30**
Seifert, P. Tube Stresses in the Radiation Part of Solar Receivers and of Conventionally Fired Heaters (81-GT-200) (A) **JI 89**
Seireg, A. The Computer and The Mechanical Engineer: A Coming of Age **N 29**; Empirical Design Procedure for the Thermohydrodynamic Behavior of Journal Bearings (81-Lub-19) (A) **D 97**
Seirig, A. A. Elections to Fellow Grade **Ap 90**
Seismic Design
Earthquake-Resistant Building Design and Construction, 2nd Ed. (CB) **N 115**
Seismic Events
Comparison of LMFBR Piping Response Obtained Using Response Spectra and Time History Methods (81-PVP-28) (A) **Ag 80**
Seismic Research
Moored Systems Designed to Sense Deep Ocean Earthquakes (80-WA/OCE-10) (A) **Ap 98**
Seismic Responses
A Double Summation Procedure for the Combination of Seismic Responses of Multiple-Excited Piping Systems (80-WA/PVP-1) (A) **Ja 97**
Seismic Testing
Dynamic Evaluation of a Nuclear Main Steam Isolation Valve Actuator (81-DET-32) (A) **O 104**
Sekas, N. J. Development of a Low-NO_x Lean Premixed Annular Combustor (81-GT-40) (A) **Je 106**
Self-Actuated Shutdown Systems
Development of a Self-Actuated Shutdown System (81-JPGC-NE-8) (A) **N 109**
Self Preserving
The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-13) (A) **My 86**
Self-Steering Trucks
The Development of an Optimum Wheel Profile for Self-Steering Trucks Under Heavy Axle Load Conditions (80-WA/RT-5) (A) **F 125**
Self-Temperature Strain Gage
Development of the Self-Temperature Compensated Resistance Strain Gage Used up to 700°C (81-GT-118) (A) **Je 113**
Semiconductor Crystal
Fiber-Optic, Semiconductor Temperature Gage (BTR) **N 78**
Semiconductors
An Optoelectronic Chip (BTR) **D 59**
Semi-Infinite Elastic Strip
A Semi-Infinite Elastic Strip Bonded to an Infinite Strip (80-WA/APM-13) (A) **Je 100**
Semi-Infinite Pipe
On the Acoustical Implications of Vortex Shedding from an Exhaust Pipe (80-WA/NC-16) (A) **F 125**

Semi-Loof Shell Element
Application of the Semi-Loof Thin Shell Element to the Analysis of Aircraft Engine Structures (81-GT-104) (A) **Je 112**
SEN Specimen
Dynamic Crack Propagation Analysis of the SEN Specimen by a Numerical Method (80-WA/PVP-2) (A) **Ja 97**
Senior, C. Transition From a Turbulent Jet into a Turbulent Plume (81-FE-29) (A) **S 82**
Senior Engineers
Underused Educational Resource (C) **O 51**
Senoo, Y. Optimum Strut-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) (A) **Ag 83**
Sensing Device
Infrared Sensing Device (IF) **Ja 67**
Sensitivity
Optimum Sensitivity Synthesis of a Cam System Incorporating Manufacturing Tolerances (80-DET-31) (A) **F 119**
Sensitivity Analysis
The Sensitivity Analysis of Cam Mechanism Dynamics (80-DET-93) (A) **Mr 109**
Sensor Array
An Electro-Optical Array Support Cable (80-WA/OCE-8) (A) **Ap 97**
Sensors
Load-Sensing Device (BTR) **My 49**
O_2 Sensing for Environmental Control and Monitoring Systems (80-ENAs-41) (A) **Mr 113**
Separated Flow Patterns
A Study of Separated Flow Patterns in Front of Buildings and Bodies Facing the Wind with Their Sharp Edge (81-FE-14) (A) **S 81**
Separated Isotopes
Nitrogen-Analysis Technique (BTR) **N 78**
Sequential Apertures
Flow Through Axially Aligned Sequential Apertures of the Orifice and Borda Types (81-HT-79) (A) **O 99**
Serbev, S. S. The Natural Frequencies and Mode Shapes of Cables with Attached Masses (81-Pet-10) (A) **My 89**
Serial Write-Ups
Praise for Profiles (C) **F 46**
Serna, M. A. A Computer Method for the Finite Displacement Problem in Spatial Mechanisms (81-DET-110) (A) **N 107**; A Simple Numerical Method for the Kinematic Analysis of Spatial Mechanisms (80-DET-23) (A) **F 120**
Sernas, V. Numerical Study of Heat Transfer in Rectangular Air Enclosures of Aspect Ratio Less Than One (80-WA/HT-43) (A) **Ap 106**
Sersen, S. J. Comparison of Liquid Solar Thermal Storage Subsystems in the National Solar Data Network (80-WA/Sol-36) (A) **Ap 95**
Servo Suspensions
Fundamental Study on Semi-Actively Controlled Pneumatic Servo Suspensions for Rail Cars (81-RT-6) (A) **Ag 76**
Seshadri, K. The Asymptotic Structure of Counterflow Premixed Flame for Large Activation Energies (81-HT-22) (A) **O 94**
Seth, B. B. Procedures for Estimating the Probability of Steam Turbine Disc Rupture from Stress Corrosion Cracking (81-JPGC-Pwr-31) (A) **D 92**
Sewage
Sewage as Nutrient (BTR) **O 57**
Sewage Sludge Incineration Systems
Design of Sewage Sludge Incineration Systems (Pollution Technology Review No. 71) (CB) **Ap 109**
Sewage Treatment Systems
Approve Space-Age Sewage Treatment System (BTR) **O 55**
Sexton, M. R. A Model for Dynamic Loss Response in Axial-Flow Compressors (81-GT-154) (A) **Jl 86**
Shaalan, M. R. A. On Wind-Tunnel Simulation of Desert Atmospheric Conditions for Sand Dune Studies (81-FE-8) (A) **Ag 83**
Shade Plate
Simple Solar Tracker (BTR) **N 74**
Shafer, H. S. Development of a Rational Procedure for Monitoring Steam Turbine Performance (81-JPGC-Pwr-20) (A) **N 112**
Shaffer, D. H. Procedures for Estimating the Probability of Steam Turbine Disc Rupture from Stress Corrosion Cracking (81-JPGC-Pwr-31) (A) **D 92**
Shaft Bow
Comparison of the Unbalance Responses of Jeffcott Rotors with Shaft Bow and Shaft Runout (81-DET-47) (A) **D 89**
Shaft Cracking Detection
Acoustic Emission Monitoring of Steam Turbines (81-JPGC-Pwr-16) (A) **N 111**
Shaft Imbalance
A System to Measure the Response of a High-Speed Rotor to a Sudden Imbalance (81-GT-117) (A) **Je 113**
Shaft Power
Towards Minimum Power for Environmental Control in Transport Aircraft (81-ENAs-4) (A) **S 86**
Shah, S. L. Application of Adaptive Control to a Computer Controlled Process (80-WA/DSC-40) (A) **Mr 117**
Shah, S. N. Forging Simulations and Properties Achievable for Large Waspaloy Forgings for Land-Based Gas Turbines (81-GT-84) (A) **Je 110**
Shale Oil
Commercializing Shale Oil (ES) **Jl 18**
In Situ Recovery of Shale Oil (BTR) **O 55**
Shale Oil Power (ES) **Mr 37**
Shale Oil Technology
An Oil Shale Scenario (ES) **Mr 37**
Shallow Waters
Turbulent Wakes in Shallow Waters (81-FE-13) (A) **S 81**
Shan-jian, G. Application of Scaling in Afterburner Test and Development (81-GT-194) (A) **Jl 89**
Shape Change
Shape Change of an Initially Vertical Wall Undergoing Condensation Driven Melting (81-HT-12) (A) **S 89**
Shape Factor
Sampling for Confidence Interval Estimation of the Fiber Shape Factor (80-Tex-5) (A) **F 122**
Shape Functions
An Isoparametric Finite Element With Nodal Derivatives (81-APM-1) (A) **S 83**
Shapiro, W. Development of Foil Journal Bearings for High Load Capacity and High Speed Whirl Stability (81-Lub-36) (A) **D 98**
Sharbaugh, J. E. LMFBR Designs for the Twenty-First Century (81-PVP-29) (A) **Ag 81**
Shareef, I. Experimental Investigation of the Effect of System Rigidity on Wear and Friction-Induced Vibrations (81-Lub-3) (A) **D 95**
Sharma, C. B. Formulas of Natural Frequency Prediction for Thin Circular Cylinders (81-DET-77) (A) **O 105**
Sharma, D. K. Design of Spring Loaded Safety Valves (81-PVP-40) (A) **Ag 82**
Sharma, M. P. Numerical Computation of Swirling Gas-Particle Flows: Application to Pulverized Coal Classifiers (80-WA/HT-31) (A) **Ap 105**
Sharma, O. P. Boundary Layer Development on Turbine Airfoil Suction Surfaces (81-GT-204) (A) **Jl 90**
Sharp-Crested Weir
The Study of Sluice Gate and Sharp-Crested Weir Through Hodograph Transformations (81-APM-23) (A) **S 85**
Sharpe, R. J. Constructive Geometry in Three Dimensions for Computer-Aided Design (81-DET-106) (A) **N 107**
Shashaty, A. J. The Reduction of Capstan Effectiveness by Cable Bending Resistance (80-WA/OCE-2) (A) **Mr 118**
Shaw, L. Performance of Solar Collectors—An Evaluation of Standard Ratings (80-WA/Sol-1) (A) **Ap 92**
Shaw, M. C. Improving Productivity in Machining (81-DE-2) (A) **Ag 77**; The Role of Wheel-Work Deflection in Grinding Operations (80-WA/Prod-11) (A) **My 82**
Shea, M. L. Carbon Dioxide Effects on Submarines (80-ENAs-32) (A) **Mr 113**
Shear Stress
A No-Slip Edge Crack on a Bimaterial Interface (80-WA/APM-14) (A) **Ja 100**
Sheehan, R. G. Electric Generation Utilizing Two-Stroke Crosshead Marine Diesel Engines with Rankine Bottoming Cycle (81-DGP-2) (A) **My 87**
Sheet Metal Forming
Superplastic Aluminum Alloy (IF) **F 61**
Shekleton, J. R. The CIVIC—A Concept in Vortex Induced Combustion, Part II (81-GT-12) (A) **Je 105**
Sheldon, G. P. The Effect of Ammonia and Oxygen Levels on the Corrosion Characteristics and Copper Release Rates of Copper Base Condenser Tube Alloys Under Simulated Steam-Side Conditions (81-JPGC-Pwr-9) (A) **N 111**
Shell-Side Fluid
Optimal Design of Bayonet Tube Exchangers for Isothermal Shell-Side Conditions (81-HT-34) (A) **O 96**
Shells
Nonlinear Corrections for Edge Bending of Shells (80-WA/APM-15) (A) **Ja 100**
Rotating Blade Vibration Analysis Using Shells (81-GT-80) (A) **Je 110**
Shelters
Low-Profile Shelter (BTR) **Ag 44**
Shelving
Marketplace Developments in Storage Furniture, Racks and Shelves (80-WA/MH-11) (A) **Ap 96**
Shen, I. C. The Influence of Unsteady Rotor Response on a Distorted Flow Field (81-GT-185) (A) **Jl 89**
Shen, M. Y. Similarity Law of Transonic Flow Fields Around Cascades (81-GT-36) (A) **Je 107**
Shen, Z. F. Evaluation of Coefficients for the Weighted Sum of Gray Gases Model (81-HT-55) (A) **O 97**
Sheng, C. F. Crack Path Prediction for a Kinked Crack in the Neighborhood of a Circular Inclusion in an Infinite Medium (81-APM-31) (A) **S 85**
Sher, P. The Need to Train Regulators (C) **Je 62**
Shereshevsky, Y. Kinematic Synthesis of Planar Two-Gear Drives With Prescribed Dwell Characteristics (81-DET-2) (A) **O 103**
Sheridan, P. J. Engineers' Salaries—An Update **Mr 40**
Sherwin, E. T. An Update of Solid Waste Resource Recovery Technology: Improved Economics through Potential Penetration of New Markets for Recycled Products (80-ENAs-9) (A) **Mr 111**
Sheu, S. Viscoplastic Lubrication of Asperities (81-Lub-43) (A) **D 99**
Shibi, A. M. On Wind-Tunnel Simulation of Desert Atmospheric Conditions for Sand Dune Studies (81-FE-8) (A) **Ag 83**
Shieh, G. P. Fatigue Analysis of Railroad Freight Car Truck Bolster (80-WA/RT-6) (A) **F 126**
Shi-jie, Y. The Quantitative Analysis of Three-Dimensional Displacement Fields by Single Laser Hologram (81-GT-215) (A) **Jl 91**
Shimazu, T. A Study on Thermal Behavior of Large Seal-Ring (81-Lub-27) (A) **D 97**
Shing Tong, S. Inverse or Design Calculations for Non-Potential Flow in Turbomachinery Blade Passages (81-GT-78) (A) **Je 110**
Shingu, S. Hydraulic Resistance Effects on Hydraulic Elevator (80-DET-112) (A) **Mr 110**
Shinn, K. E. Hard-Surface Drill String Stabilizer Design Concept to Accommodate Washover Operations (81-Pet-4) (A) **My 88**
Shiohata, K. Method of Determining Locations of Unbalances in Rotating Machines (81-DET-12) (A) **D 88**
Ships
Coal-Fired Ships (ES) **O 26**
No Waiting in Line (ES) **D 25**
Shi-qi, Z. Development of the Self-Temperature Compensated Resistance Strain Gage Used up to 700°C (81-GT-118) (A) **Je 113**
Shiraishi, M. In-Process Measurement of Surface Roughness in Turning by Laser Beams (80-WA/Prod-17) (A) **My 83**
Shiraki, K. Transverse Vibrations of a General Cracked-Rotor Bearing System (81-DET-45) (A) **D 89**
Shock Absorbers
Computer-Aided Analysis and Experimental Verification of a Motorcycle Suspension (81-DET-84) (A) **D 90**
Shocks
An Aerothermodynamic Analysis of Transonic Compressor Rotors Containing Three-Dimensional Shocks (81-GT-120) (A) **Je 114**

Shoemaker, H. D. Mud Pulse Tachometer for Downhole Drilling Motors (81-Pet-3) (A) **My 88**

Shorelines
Oil Spill Cleanup and Protection Techniques for Shorelines and Marshlands. (Pollution Technology Review, No. 78) (CB) **N 116**

Short Bearings
Theory of Lubrication With Ferrofluids: Application to Short Bearings (81-Lub-39) (A) **D 99**

Short Pin Fins
Heat Transfer Coefficients for Staggered Arrays of Short Pin Fins (81-GT-75) (A) **Je 110**

Shoup, T. E. The Sensitivity Analysis of Cam Mechanism Dynamics (80-DET-93) (A) **Mr 109**

Shrouded Pockets
Analysis of Face Seals with Shrouded Pockets (81-Lub-49) (A) **D 99**

Shrouded Turbine Blades
Investigation of Vibration of Shrouded Turbine Blades (81-DET-129) (A) **N 108**

Shuaib, A. N. Explicit Identification of Machine Tool Structure and Cutting Process Using Bivariate Time Series Models (80-WA/Prod-27) (A) **My 84**

Shuler, M. L. The Potential Role of Aerobic Biological Waste Treatment in Regenerative Life Support Systems (81-ENAs-20) (A) **S 87**

Shumway, R. W. A Best Estimate Radiation Heat Transfer Model Developed for TRAC-BD1 (81-HT-68) (A) **O 98**

Shuttle Flights
Environmental Control of a Pressurized Equipment Container for Shuttle Flights—The Spacelab Igloo (80-ENAs-19) (A) **Mr 111**

Tapping The Resources of a New 'Continent' **Je 26**

Shuttle Orbiter
Active Thermal Control for an Advanced Power Platform (81-ENAs-31) (A) **S 87**

The Shuttle Extravehicular Mobility Unit (EMU)—A Combination of New Technology and Proven Hardware (81-ENAs-41) (A) **S 88**

Shuttle Orbiter Ammonia Boiler Subsystem (81-ENAs-44) (A) **O 101**

SI Facts
SI Facts Discontinued (NR) **D 76**

SI Units
Measure for Measure (C) **F 48**

More Metric Musings (C) **D 57**

Speaking of SI . . . (C) **Ag 42**

Siang, H. H. Moisture Transfer in Concrete Pavements (81-HT-32) (A) **O 96**

Siddal, J. N. The Optimization Problem with Optimal Tolerance Assignment and Full Acceptance (80-DET-47) (A) **F 121**

Side Recesses
Experimental Studies on the Flow Within the Side Recesses of a Centrifugal Pump Impeller and Casing (80-WA/FE-7) (A) **My 86**

Sideload Compressors
Equivalent Performance Testing of Multisection Compressors (81-GT-150) (A) **Jl 86**

Siegel, M. A. Critical Materials—A New Dimension (81-GT-61) (A) **Je 109**

Signal Processing
Real-Time Vibration Rate Acquisition and Signal Processing Using a Low-Cost Microcomputer (81-DET-28) (A) **O 103**

Signature Analysis
Signature Analysis Applied to Drilling (81-DET-9) (A) **D 88**

Signer, H. R. Endurance Tests with Large-Bore Tapered-Roller Bearings to 2.2 Million DN (81-Lub-56) (A) **D 100**

Silica Gel Beds
The Adiabatic Adsorption-Desorption Characteristics of Silica Gel Beds—Part 1: Theory (80-WA/Sol-30) (A) **Ap 94**; Part 2: Curve Fits (80-WA/Sol-31) (A) **Ap 94**

Silicon Nitride
NASA Gas Turbine Stator Vane Ring (81-GT-208) (A) **Jl 90**

Silicox, L. K. Editor, Retiring (C) **N 72**

Silo Combustor
Low Emissions Silo Combustor (81-GT-46) (A) **Je 107**

Silvaggio, J. A., Jr. Field Testing and Laboratory Evaluation of Corrosion Cracking of Rotor Steels (81-JPGC-Pwr-29) (A) **N 113**

Silverwood, J. B. Storm Over S-T View (C) **Ja 51**

Simon, J. Engineers and Nuclear Weapons (C) **O 50**

Simon, M. Small Gas Turbine with Large Parabolic Dish Collectors (81-GT-201) (A) **Jl 90**

Simon, T. W. Turbulent Boundary Layer Heat Transfer Experiments: A Separate Effects Study on a Convexly Curved Wall (81-HT-78) (A) **O 98**

Simon, V. Grinding Wheel Profile for Hob Relief Grinding (81-DET-113) (A) **D 91**

Simonis, J. C. Axial Restraint of Tubes in a U-Tube Type Steam Generator (81-DET-38) (A) **O 104**

Simple Cycles
MS9001E—A New 100-MW Gas Turbine (81-GT-31) (A) **Je 106**

Simplified Theorems
Turbomachines: A Guide to Design, Selection and Theory (CB) **N 115**

Sims, E. R., Jr. Unit Handling—Problems and Opportunities (80-WA/MH-7) (A) **Ap 96**

Sims, W. B. Coordinated Sootblowing—A Station Approach (81-JPGC-Fu-7) (A) **D 93**

Simulators
The ASPEN Simulator (ES) **D 25**

Low-Cost, Risk-Free Learning (ES) **Jl 19**

A Swedish-American Offering (ES) **Jl 18**

Sinclair, J. H. Superhybrid Composite Blade Impact Studies (81-GT-24) (A) **Je 106**

SINDA System
Aspects of Thermal Control Analysis of Spacelab (80-ENAs-12) (A) **Mr 111**

Singer, J. G. *(editor)* Combustion: Fossil Power Systems (CB) **N 116**

Singer, R. M. Operational Safety and Reliability Research at EBR-II (81-JPGC-NE-11) (A) **N 110**

Singh, A. P. Hydrodynamic Lubrication of Finite Slider Bearings: Effect of Film Shape, and Their Computer Aided Optimum Designs (81-Lub-40) (A) **D 99**

Singh, C. Lubrication of a Cylinder on a Plane With a Non-Newtonian Fluid Considering Cavitation (81-Lub-2) (A) **D 95**; Theoretical Effects of Rigid Particle Additives in Noncyclic Squeeze Films (81-Lub-28) (A) **D 97**

Singh, K. P. Some Fundamental Relationships for Tubular Heat Exchanger Thermal Performance (81-HT-33) (A) **O 95**

Singh, P. P. Effect of Water Injection for NO_x Reduction with Synthetic Liquid Fuels Containing High Fuel-Bound Nitrogen in a Gas Turbine Combustor (81-GT-51) (A) **Je 108**

Singh, T. Steady-State Digital Computer Model for Supercritical Steam Generators (81-JPGC-Pwr-4) (A) **N 110**

Singh, U. K. A Computation and Comparison with Measurements of Transonic Flow in an Axial Compressor Stage with Shock and Boundary Layer Interaction (81-Gr/GT-5) (A) **O 101**

Single Laser Hologram
The Quantitative Analysis of Three-Dimensional Displacement Fields by Single Laser Hologram (81-GT-215) (A) **Jl 91**

Single-Pass Rub Test
Single Pass Rub Phenomena—Analysis and Experiment (81-Lub-55) (A) **D 100**

Single Shafts
Gemini T-20G-8 XM1 Tank APU (81-GT-81) (A) **Je 110**

Single-Stage Transonic Fan
Experimental Investigation of a Low Hub-to-Tip Ratio Single Stage Transonic Fan (81-GT-209) (A) **Jl 90**

Single-Toothed Cutter
Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part 1: Plain Milling with a Single-Toothed Helical Cutter (80-WA/Prod-4) (A) **My 82**; Part 2: Plain Milling with a Multitoothed Helical Cutter (80-WA/Prod-5) (A) **My 82**

Sinha, P. Lubrication of a Cylinder on a Plane With a Non-Newtonian Fluid Considering Cavitation (81-Lub-2) (A) **D 95**; Theoretical Effects of Rigid Particle Additives in Noncyclic Squeeze Films (81-Lub-28) (A) **D 97**

Sinhasan, R. Dynamics of Coupled Fluid-Structure Multiplate Systems (81-DET-145) (A) **D 91**

Sintering Microstructure
Sintering Microstructure and Properties of Si_3N_4 and SiC Based Structural Ceramics (81-GT-220) (A) **Jl 91**

Sirignano, W. A. One-Dimensional Turbulent Flame Propagation in an Air-Fuel Droplet Mixture (80-WA/HT-37) (A) **Ap 105**

Sissom, L. E. Death, Injury and Destruction of Property by Design (80-WA/DE-13) (A) **Ap 101**

Sistino, A. J. Correlation Between Results of Zone Method and Experiment in Radiative Heat Transfer (81-HT-71) (A) **O 98**

Situation Ethics
On Determining Right and Wrong (C) **O 51**

Sivertsen, O. MECSYN: An Interactive Computer Graphics System for Mechanism Synthesis by Algebraic Means (80-DET-68) (A) **Mr 107**

Sizing
Fatigue Considerations for Sizing Machinery Components (81-DE-8) (A) **Ag 78**

Sjoblom, B. G. A. Premixing and Flash Vaporization in a Two-Stage Combustor (81-GT-41) (A) **Je 106**

Skin Friction
Turbulence Structure and Skin Friction in Turbulent Boundary Layers on Irregularly Rough Surfaces (81-FE-35) (A) **S 83**

Skinner, F. D. Mixing and Gasification of Coal in an Entrained Flow Gasifier (80-WA/HT-30) (A) **Ap 105**

Skreiner, M. A New Solution to Coulomb Friction in Mechanism Bearings: Theory and Application (80-DET-52) (A) **Mr 106**

Skulte, P. Fatigue and Fracture Analysis of Two Turbine Shafts (81-PVP-27) (A) **Ag 81**

Slag
Slag Heat Recovery System (IF) **F 61**

Slagging
Chemically Induced Slagging to Improve Superheat/Reheat Temperature (80-JPGC/Fu-1) (A) **Ja 98**

Slemrod, M. Controllability of Distributed Bilinear Systems; Recent Results and Open Problems (80-WA/DSC-27) (A) **Mr 116**

Slider Bearings
Hydrodynamic Lubrication of Finite Slider Bearings: Effect of Film Shape, and Their Computer Aided Optimum Designs (81-Lub-40) (A) **D 99**

Slider-Crank Function Generator
Probabilistic Models in Computer Automated Slider-Crank Function Generator Design (80-DET-46) (A) **F 121**

Slider-Crank Mechanism
Member Initial Curvature Effects on the Elastic Slider-Crank Mechanism Response (80-DET-72) (A) **Mr 108**

Stability of Motion of Elastic Planar Linkages With Application to Slider Crank Mechanism (81-DET-6) (A) **N 104**

Sliders
Synthesis of Sliders for Plane Rigid Body Guidance (80-DET-109) (A) **Mr 110**

Sliding
The Measurement of Dynamic Normal and Frictional Contact Forces During Sliding (81-DET-40) (A) **O 104**

Sliding Point Contacts
The Effects of Artificially-Produced Defects on the Film Thickness Distribution in Sliding EHD Point Contacts (81-Lub-46) (A) **D 98**

Slifer, B. C. Storm Over S-T View (C) **Ja 52**

Slip
Structural Damping by Slip in Joints (81-DET-139) (A) **D 92**

Slip Amplitude
Fretting Wear and Fretting Fatigue—How Are They Related? (81-Lub-13) (A) **D 97**

Slip-Flow Theory
An Experimental Investigation of Molecular Rarefaction Effects in Gas Lubricated Bearings at Ultra-Low Clearances (81-Lub-44) (A) **D 99**

Slip Measurements
Slip Measurement in an Angular Contact Ball Bearing (81-Lub-33) (A) **D 98**

Slipper Stiffnesses
Dynamic Analysis of High Speed Rocket Sleds (81-DET-42) (A) **O 104**

Sludge
Sewage as Nutrient (BTR) **O 57**

Sludge Generation
Design of Sewage Sludge Incineration Systems (Pollution Technology Review No. 71) (CB) **Ap 109**

Slug Flow
Theoretical Prediction of Onset of Horizontal Slug Flow (80-WA/FE-6) (A) **My 85**
Sluice Gate
The Study of Sluice Gate and Sharp-Crested Weir Through Hodograph Transformations (81-APM-23) (A) **S 85**
Slurry Fuels
COM-Powered Diesels (ES) **Mr 37**
Slurry Pipelines
Clad Steels (C) **Ji 46**
Slurry Pipelines of the Future **Ap 30**
Slurry Pumps
Dead Sea Slurry Pump (IF) **Je 72**
Wear and Operating Cost Reduction of Slurry Pumps by Means of Hydrodynamic Variable Speed Couplings (80-WA/MH-3) (A) **Ap 96**
Small Cars
Detroit Expected to Gain Ground Against Imports (BTR) **My 47**
Smalley, A. J. Application of the Principle of Reciprocity to Flexible Rotor Balancing (81-DET-49) (A) **N 105**
Smil, V. *(editor)* Energy in the Developing World: The Real Energy Crisis (CB) **Ap 109**
Smith, A. A. Coordinated Sootblowing—A Station Approach (81-JPGC-Fu-7) (A) **D 93**
Smith, C. O. *(author)* Products Liability: Are You Vulnerable? (CB) **My 92**
Smith, D. P. Application of Water Cooling for Improved Gas Turbine Fuel Flexibility and Availability (81-GT-68) (A) **Je 109**
Smith, E. E. Release Rate Model for Developing Fires (81-HT-4) (A) **S 88**
Smith, E. M. Optimal Design of Bayonet Tube Exchangers for Isothermal Shell-Side Conditions (81-HT-34) (A) **O 96**
Smith, J. L., Jr. Superconducting Generators from Conception to Power Station **Ap 44**
Smith, J. T. Sintering Microstructure and Properties of Si_3N_4 and SiC Based Structural Ceramics (81-GT-220) (A) **Ji 91**
Smith, L. H., Jr. Spanwise Mixing in Axial-Flow Turbomachines (81-GT-57) (A) **Je 109**
Smith, L. T. Experimental Determination of Transition Reynolds Number for Unsteady Film Cooling (81-GT-94) (A) **Je 111**
Smith, M. J. A Baseload Gas Turbine to Meet Utility Requirements for Reliability and Availability (81-GT-127) (A) **Ji 84**
Smith, P. G. Double-Wall Tube Steam Generator for Breeder Nuclear Plants (81-JPGC-NE-2) (A) **N 109**
Smith, R. Strain Concentration Factor as a Function of Strain in a Design Application (81-DE-5) (A) **Ag 78**
Smith, R. N. The Thermal Behavior of Oscillating Squeeze Films (81-Lub-26) (A) **D 97**
Smith, R. S., III Vibration Measurement of a Moving Tangential Drive Belt (81-DET-36) (A) **O 104**
Smith, T. F. Evaluation of Coefficients for the Weighted Sum of Gray Gases Model (81-HT-55) (A) **O 97**
Smith, T. M. *(author)* Project Whirlwind: The History of a Pioneer Computer (CB) **Ag 84**
Smoke
11.5 Micron Emission from Smoke Computed Using Finite Cloud Geometry (80-WA/HT-1) (A) **Ap 103**
Radiation and Smoke from the Gas Turbine Combustor Using Heavy Fuels (81-HT-21) (A) **O 94**
Smoke Filling in an Enclosure (81-HT-8) (A) **S 89**
Smoke Filling
An Experimental Study of Upper Hot Layer Stratification in Full-Scale Multiroom Fire Senarios (81-HT-9) (A) **S 89**
Smoot, L. D. Mixing and Gasification of Coal in an Entrained Flow Gasifier (80-WA/HT-30) (A) **Ap 105**
Snap Loads
At-Sea Evaluation of a Ram Tensioner for Ocean Deployment and Recovery (80-WA/OCE-5) (A) **Ap 97**
Sneck, H. J. A Waste Energy Power Generation Concept—The Plumemill (80-JPGC/Pwr-9) (A) **F 116**
Snowpack
A Simple Model of Seasonal Sea Ice Growth (80-WA/HT-20) (A) **Ap 104**
Sobanik, J. B. Cooling Air Flow Characteristics in Gas Turbine Components (81-GT-76) (A) **Je 110**
Social Science
NAS Members Concerned Over Budget Slashes (EN) **Ji 74**
Socio-Technical View
Opinion on Opinion Pages (C) **Ap 56**
What's Wrong With Being Controversial? (C) **Mr 65**
Sodium
Experience with High Sodium Subbituminous Coals (80-WA/Fu-4) (A) **F 126**
Thermal Radiation Properties of ThO_2 in Contact with Sodium and Steel (81-HT-66) (A) **O 96**
Sodium Sulfate
Boosting Precipitator Performance (ES) **F 23**
Sodium-Water Reaction
Sodium-Water Reaction Testing in Support of LMFBR Steam Generator Development (81-JPGC-NE-3) (A) **N 109**
U.S. Large Leak Sodium-Water Reaction Test Program (80-WA/NE-3) (A) **Ja 96**
Software
Series on Computer Programs (TL) **N 114**
Software Library
Elements of an Optimization Software Library for Engineering Design (80-WA/DSC-41) (A) **Mr 117**
Sohoni, V. A State Space Method for Kinematic Optimization of Mechanisms and Machines (80-DET-43) (A) **F 121**
Soil
Let's Save Our Soil (C) **My 43**
Soil Liquefaction
Reducing Earthquake Hazards (NB) **Ap 80**
Solan, A. The Effect of Inertia on Flow Between Misaligned Rotating Disks (80-WA/FE-2) (A) **My 85**; Rotating Compressible Flow Over the Edge of a Finite Disk (81-APM-19) (A) **S 84**
Solar Access Protection
A Place in the Sun for Everyone (BTR) **F 57**
Solar Array Technology
Solar Cell Array Design Handbook: The Principles and Technology of Photovoltaic Energy Conversion (CB) **Ja 104**
Solar Astronomy
Solar Astronomy in a Frozen Land (NR) **Ap 76**
Solar Cell Arrays
Solar Cell Array Design Handbook: The Principles and Technology of Photovoltaic Energy Conversion (CB) **Ja 104**
Solar Cells
Design of Solar Cells for Use in Photovoltaic/Thermal Collectors (80-WA/Sol-37) (A) **Ap 95**
Solar Cell Housed in Light-Bulb Enclosure (BTR) **S 55**
Thin-Film Solar Cells (NB) **My 67**
Solar Challenger
Solar-Powered Plane to Make First Paris-to-London Flight (NR) **Je 81**
Solar-Collector Systems
Binary Rankine-Cycle Engines for Solar-Thermal Power Systems (80-WA/Sol-19) (A) **Ap 94**
Solar Collectors
AA1 Corporation Receiver Design Experience in Concentrating Solar Collectors (81-Sol-1) (A) **S 80**
Analysis of Two-Phase Flow Solar Collectors with Application to Heat Pumps (80-WA/Sol-32) (A) **Ap 94**
Energy Transport System Optimization for Distributed Networks of Solar Collectors (81-Sol-1) (A) **My 87**
French, Texas Tech Engineers Exchange Solar Information (EN) **My 71**
Frequency Response Analysis of Fluid Control Systems for Parabolic-Trough Solar Collectors (80-WA/Sol-15) (A) **Ap 93**
Modeling and Analysis of an All-Fiberglass Flat Plate Solar Collector (80-WA/Sol-4) (A) **Ap 92**
Nocturnal Radiation from a Solar Collector (80-WA/Sol-35) (A) **Ap 95**
Parametric Analysis of Lowered Air-Heating Solar Collectors (80-WA/Sol-38) (A) **Ap 95**
Performance of Solar Collectors—An Evaluation of Standard Ratings (80-WA/Sol-1) (A) **Ap 92**
Solar Collectors for All Seasons (BTR) **S 51**
Solar Process Heat for Industry (IF) **Ji 60**
Solar Thermal-Electric Power Plant (IF) **My 54**
Temperature Variation in the Absorber Plate of an Air Heating Flat Plate Solar Collector (80-WA/Sol-2) (A) **Ap 92**
Solar Electricity
Storm Over S-T View (C) **Ja 50**
Solar Energy
AA1 Corporation Receiver Design Experience in Concentrating Solar Collectors (81-Sol-1) (A) **S 80**
The Adiabatic Adsorption-Desorption Characteristics of Silica Gel Beds—Part 1:Theory (80-WA/Sol-30) (A) **Ap 94**; Part 2: Curve Fits (80-WA/Sol-31) (A) **Ap 94**
Analysis of Two-Phase Flow Solar Collectors with Application to Heat Pumps (80-WA/Sol-32) (A) **Ap 94**
Analytical Predictions of Liquid and Air Photovoltaic/Thermal Flat-Plate Collector Performance (80-WA/Sol-3) (A) **Ap 92**
Binary Rankine-Cycle Engines for Solar-Thermal Power Systems (80-WA/Sol-19) (A) **Ap 94**
Bond Graph Models for Simulating HVAC Systems (80-WA/Sol-16) (A) **Ap 93**
Bond Graph Structural Models for Heat Exchangers (80-WA/Sol-17) (A) **Ap 94**
Comparison of Liquid Solar Thermal Storage Subsystems in the National Solar Data Network (80-WA/Sol-36) (A) **Ap 95**
Comparison of Several Models for Long-Term Monthly Average Daily Insolation and Horizontal Surfaces and the Estimation of Horizontal Surface Insolation for 16 U.S. Locations (80-WA/Sol-28) (A) **Ap 94**
Conceptual Design of an Advanced Water/Steam Receiver for a Solar Thermal Central Power System (81-Sol-5) (A) **S 80**
"David and Goliath" (ES) **My 19**
Design and Evaluation of a Computed Controlled Solar Collector Simulator (80-WA/Sol-6) (A) **Ap 92**
Design Procedure and Applications of Solar-Assisted Series Heat Pump Systems (80-WA/Sol-9) (A) **Ap 93**
Design of Solar Cells for Use in Photovoltaic/Thermal Collectors (80-WA/Sol-37) (A) **Ap 95**
The Development and Design of Steam/Water Solar Receivers for Commercial Applications (81-Sol-4) (A) **S 80**
Development of a Solar Thermal Central Heat Receiver Using Molten Salt (81-Sol-2) (A) **S 80**
Diffuse Sky Measurements and Determination of Corrected Shadow Band Multiplication Factors (80-WA/Sol-26) (A) **Ap 94**
Dynamic Modeling and Experimental Simulation of Active Solar Energy Systems for the Evaluation of Control Strategies (80-WA/Sol-14) (A) **Ap 93**
Economic Analysis and Optimization of Solar Residential Space Heating (80-WA/Sol-11) (A) **Ap 93**
The Effects of Clouds in Modeling Solar Radiation (80-WA/Sol-23) (A) **Ap 94**
Energy Transport System Optimization for Distributed Networks of Solar Collectors (81-Sol-1) (A) **My 87**
Evaluation of a Proposed Modification of the F-Chart Method to Include Collector Array Air Leakage (80-WA/Sol-12) (A) **Ap 93**
Focus on Solar Energy (IF) **F 60**
Forced Ventilation Envelope House: Computer Simulations (80-WA/Sol-5) (A) **Ap 92**
Frequency Response Analysis of Fluid Control Systems for Parabolic-Trough Solar Collectors (80-WA/Sol-15) (A) **Ap 93**
Heat Transfer and the Future of Solar Energy Utilization (80-WA/Sol-41) (A) **Ap 95**
High Temperature Solar Thermal Technology (80-WA/Sol-20) (A) **Ap 94**
The International Energy Agency's Program to Develop a Portable Meteorological Instrument Package for Solar Energy Applications (80-WA/Sol-27) (A) **Ap 95**
Methanol from Solar Energy (IF) **Ji 61**
Modeling and Analysis of an All-Fiberglass Flat Plate Solar Collector (80-WA/Sol-4) (A) **Ap 92**
Nocturnal Radiation from a Solar Collector (80-WA/Sol-35) (A) **Ap 95**
Nuclear's Record (C) **Mr 66**
Official Solar Guidelines Approved (NB) **O 77**
On-Site Quality Control of Insolation Measurements (80-WA/Sol-25) (A) **Ap 94**

Operational Characterization of the Solar-Thermal Power System Near Willard, N.M. (80-WA/Sol-39) (A) **Ap 95**
The Parallel Heat Pump and Photovoltaic Heating and Cooling—Phase II (80-WA/Sol-40) (A) **Ap 95**
Parametric Analysis of Lowered Air-Heating Solar Collectors (80-WA/Sol-38) (A) **Ap 95**
Performance of Cross-Cooled Desiccant Dehumidifiers (80-WA/Sol-34) (A) **Ap 95**
Performance of Solar Collectors—An Evaluation of Standard Ratings (80-WA/Sol-1) (A) **Ap 92**
A Place in the Sun for Everyone (BTR) **F 57**
Radiation and Free Convection Shield for Passive Thermal Control (80-WA/Sol-7) (A) **Ap 93**
Rockbeds for Comfort Cooling: An Assessment in Several U.S. Cities (80-WA/Sol-8) (A) **Ap 93**
The Solar Alternative: Status and Prospects (NR) **Jl 82**
Solar Assisted Desiccant Dehumidification and Cooling with an Indirect Evaporative Cooler (80-WA/Sol-29) (A) **Ap 94**
Solar Brayton Cycle for Heating and Cooling (80-WA/Sol-33) (A) **Ap 95**
Solar Energy Conference, review (NR) **Jl 62**
Solar Energy Crop Dryers (IF) **S 59**
Solar Energy: Economics vs. Energetics **My 35**
Solar Energy Handbook (CB) **Je 116**
A Solar Receiver For a 25-kW(e) Gas Turbine **Ja 26**
Solar Thermal-Electirc Power Plant (IF) **My 54**
A Space Technology Spinoff (ES) **Ag 21**
Support for S-T Stance (C) **Mr 65**
Temperature Variation in the Absorber Plate of an Air Heating Flat Plate Solar Collector (80-WA/Sol-2) (A) **Ap 92**
Testing of the U.S. Solar Pilot Plant Receiver (81-Sol-3) (A) **S 80**
Thermal and Economic Assessment of Ground-Coupled Storage for Residential Solar Heat Pump Systems (80-WA/Sol-10) (A) **Ap 93**
Thermal Storage Requirements for Parabolic Dish Solar Power Plants (80-WA/Sol-21) (A) **Ap 94**
Torque Ripple in a Darrieus, Vertical Axis Wind Turbine (80-WA/Sol-13) (A) **Ap 93**
VAWTDYN—A Numerical Package for the Dynamic Analysis of Vertical Axis Wind Turbines (80-WA/Sol-18) (A) **Ap 94**
What Do an Office Building, Prison, and University Hall Have in Common?—Energy-Efficient Designs (NR) **Ja 68**

Solar Energy Devices
Glass-Reinforced Concrete for Solar Energy Devices (BTR) **S 51**

Solar Energy Systems
Dynamic Modeling and Experimental Simulation of Active Solar Energy Systems for the Evaluation of Control Strategies (80-WA/Sol-14) (A) **Ap 93**
Sun-Tracking Device (IF) **Mr 76**

Solar Energy Utilization
Heat Transfer and the Future of Solar Energy Utilization (80-WA/Sol-41) (A) **Ap 95**

Solar Envelope
A Place in the Sun for Everyone (BTR) **F 57**

Solar Gain
Forced Ventilation Envelope House: Computer Simulations (80-WA/Sol-5) (A) **Ap 92**

Solar Heat Receivers
Development of a Solar Thermal Central Heat Receiver Using Molten Salt (81-Sol-2) (A) **S 80**

Solar Heating
Expanded Socio-Technical Outlook Urged (C) **Ap 55**
The International Energy Agency's Program to Develop a Portable Meteorological Instrument Package for Solar Energy Applications (80-WA/Sol-27) (A) **Ap 95**

Solar Hybrid Pilot Plant
A Solar Hybrid System (ES) **O 26**

Solar Industry
Selling Solar Overseas (ES) **My 18**
Solar Scholarship (EN) **Ja 72**

Solar Photovoltaic Energy
Solar Outlook: Not So Sunny? (C) **Mr 65**

Solar Pilot Plant
Testing of the U.S. Solar Pilot Plant Receiver (81-Sol-3) (A) **S 80**

Solar Power
Solar Outlook: Not So Sunny? (C) **Mr 65**

Solar Power Plants
Combined Gas and Steam Cycle for a Gas-Cooled Solar Tower Power Plant (81-GT-102) (A) **Je 112**
Thermal Storage Requirements for Parabolic Dish Solar Power Plants (80-WA/Sol-21) (A) **Ap 94**

Solar Power Systems
Operational Characterization of the Solar-Thermal Power System Near Willard, N. M. (80-WA/Sol-39) (A) **Ap 95**

Solar-Powered Laser
Sun-Powered Laser (BTR) **Ap 59**

Solar-Powered Plane
Solar-Powered Plane to Make First Paris-to-London Flight (NR) **Je 81**

Solar-Powered Ratio Station
Solar-Powered Ratio Station (C) **Mr 67**

Solar Pumped Laser
Solar Technologies Moving into 'Orbit' (NR) **O 68**

Solar Radiation
An Analytical and Experimental Investigation of the Heat Transfer Mechanisms within Fibrous Media Exposed to Solar Radiation (81-HT-41) (A) **O 96**
Diffuse Sky Measurements and Determination of Corrected Shadow Band Multiplication Factors (80-WA/Sol-26) (A) **Ap 94**
The Effects of Clouds in Modeling Solar Radiation (80-WA/Sol-23) (A) **Ap 94**
NASA Detects Changes in Sun's Energy Output (BTR) **Ja 58**
Sun-Tracking Device (IF) **Mr 76**

Solar Receivers
Conceptual Design of an Advanced Water/Steam Receiver for a Solar Thermal Central Power System (81-Sol-5) (A) **S 80**
The Development and Design of Steam/Water Solar Receivers for Commercial Application (81-Sol-4) (A) **S 80**
Five-MW(th) Solar Receiver Passes Test (BTR) **Je 69**
A Solar Receiver For a 25-kW(e) Gas Turbine **Ja 26**
Tube Stresses in the Radiation Part of Solar Receivers and of Conventionally Fired Heaters (81-GT-200) (A) **Jl 89**

Solar Scholarship
The Solar Energy Industries Association (EN) **Ja 72**

Solar Subsystems
Solar-Assisted Space Heating System (IF) **Ag 51**

Solar System Designers
Comparison of Several Models for Long-Term Monthly Average Daily Insolation and Horizontal Surfaces and the Estimation of Horizontal Surface Insolation for 16 U.S. Locations (80-WA/Sol-28) (A) **Ap 94**

Solar Systems
Hawaiian Hospital Taps Sun (BTR) **Ap 60**
Sun Heats Italian Tannery (IF) **Ag 51**

Solar Technologies
Energy Strategies: Toward a Solar Future (CB) **F 128**
Enlisting Solar (ES) **Jl 19**
Focus on Solar Energy (IF) **F 60**
1981 Pressure Vessel and Piping Conference, review (NR) **S 64**
Solar Technologies Moving into 'Orbit' (NR) **O 68**

Solar Thermal Energy
High Temperature Solar Thermal Technology (80-WA/Sol-20) (A) **Ap 94**
Small Gas Turbine with Large Parabolic Dish Collectors (81-GT-201) (A) **Jl 90**

Solar Thermal Power
Stirling Engine for Solar Thermal Power (BTR) **Ap 60**

Solar Thermal Storage
Comparison of Liquid Solar Thermal Storage Subsystems in the National Solar Data Network (80-WA/Sol-36) (A) **Ap 95**

Solar Tracker
Simple Solar Tracker (BTR) **N 74**

Solar Water Heaters
Equipment Leasing Terms for Solar Heaters (IF) **S 58**

Solid Cylinders
Vibrations of Solid Cylinders (80-WA/APM-20) (A) **Ja 101**

Solid-Gas Mixtures
Effective Thermal Conductivity of Porous Solid-Gas Mixtures (80-WA/HT-63) (A) **My 84**

Solid Lubricants
Lubrication Mechanism of Solid Lubricants in Oils (81-Lub-50) (A) **D 99**

Solid Objects
Computer Imaging Problem Solved (BTR) **N 74**

Solid Particle Erosion
Conceptual Design of 100 Percent External Turbine Bypass Systems (80-JPGC/Pwr-19) (A) **F 117**

Solid Waste
A Cooperative Partnership (ES) **S 24**
Join a Waste Processing Plant Tour and Seminar (NR) **S 68**
Recovering the Energy in Wastes (STV) **My 75**
Solid Waste Conversion to Energy: Current European and U.S. Practice (CB) **Mr 119**
An Update of Solid Waste Resource Recovery Technology: Improved Economics through Potential Penetration of New Markets for Recycled Products (80-ENAs-9) (A) **Mr 111**
Waste-to-Energy Conversion—Sound, But Costly (NR) **Ja 69**

Solomon, N. G. Industrial Waste Heat Recovery (80-WA/HT-17) (A) **Ap 104**

Solute Polarization
The Effect of Solute Polarization on the Freezing and Thawing of Aqueous Solutions (80-WA/HT-21) (A) **Ap 104**

Solution Rectification
Implementation of Solution Rectification Techniques in an Interactive Linkage Synthesis Program (80-DET-91) (A) **Mr 109**

Somerscales, E. F. C. An Application of the Optical Correlation Computer to the Detection of the Malkus Transitions in Free Convection (80-WA/HT-27) (A) **Ap 105**

Sommer, H. J., III A Technique for Kinematic Modelling of Anatomical Joints (80-DET-84) (A) **Mr 109**

Sommer, T. M. Development of a High-Solids, Coal-Water Mixture for Application as a Boiler Fuel (81-JPGC-Fu-4) (A) **D 93**

Soni, A. H. Accessible Region and Synthesis of Robot Arms (80-DET-101) (A) **Mr 109**; Kineto-Elastodynamic Analysis of Mechanisms by Finite Element Formulations (80-DET-103) (A) **Mr 110**; Motion Simulation of an Articulated Robotic Arm Subjected to Static Forces (80-DET-102) (A) **Mr 110**

Sonnenschein, H. A Modular Optimizing Calculation Method of Power Station Energy Balance and Plant Efficiency (81-GT-22) (A) **Je 105**

Sontag, J. M. *(editor)* Carcinogens in Industry and the Environment (Pollution Engineering and Technology Series, Vol. 16) (CB) **N 116**

Soo, S. L. Heat Transfer and Reaction Rate in Steam Gasification of Coal (80-WA/HT-14) (A) **Ap 104**

Soom, A. Interactions Between Dynamic Normal and Frictional Forces During Unlubricated Sliding (81-Lub-15) (A) **D 97**; The Measurement of Dynamic Normal and Frictional Contact Forces During Sliding (81-DET-40) (A) **O 104**; Optimal Design of Linear and Nonlinear Vibration Absorbers for Damped Systems (81-DET-83) (A) **N 105**

Soong, T. C. On the Unbonded Contact Between Plates and Layered Cylinders (80-WA/APM-11) (A) **Ja 100**

Soot
An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) (A) **Je 106**

Soot Volume
Soot Volume Fraction Profiles in a Free Combusting Boundary Layer (81-HT-1) (A) **S 88**

Sootblower Control Systems
Boiler Heat Transfer Model for Operator Diagnostic Information (81-JPGC-Pwr-14) (A) **N 111**

Sootblowing
Coordinated Sootblowing—A Station Approach (81-JPGC-Fu-7) (A) **D 93**

Sound Control
Industrial Noise Pollution—Part 2: Identifying and Controlling Industrial Noise Sources **Ag 24**

Sound-Intensity Maps
Gas-Filled Acoustic Lens (BTR) **Ap 63**

Sound Transmission
Sound Transmission Through a Cylindrical Pipe Wall (80-WA/NC-3) (A) **F 123**

Sound Waves
The Promise in Acoustical Holography (BTR) **O 60**

Sounder, W. E. *(author)* Management Decision

Methods for Managers of Engineering and Research (CB) **Ap 108**

Soundprints
'Soundprints' of Materials (BTR) **Ap 62**

Sour Wet Service
Specifying Linepipe Suitable for Safe Operation in Sour Wet Service (81-Pet-1) (A) **My 88**

South Pole
Solar Astronomy in a Frozen Land (NR) **Ap 76**

Soviet Union
Fulbright Lecturers for USSR (EN) **Ap 82**

Space
Aerospace Structures, Structural Dynamics, and Materials (NR) **O 72**
Tapping The Resources of a New 'Continent' **Je 26**

Space Activity
EVA Equipment for Satellite Service (80-ENAs-48) (A) **Mr 114**

Space Experiments
Life Sciences Experiments on Spacelab 1 **Je 50**

Space Heaters
Fuel-Efficient Unit Heater (BTR) **Ja 58**

Space Heating
Design Procedure and Applications of Solar-Assisted Series Heat Pump Systems (80-WA/Sol-9) (A) **Ap 93**
Economic Analysis and Optimization of Solar Residential Space Heating (80-WA/Sol-11) (A) **Ap 93**

Space Heating Systems
Solar-Assisted Space Heating System (IF) **Ag 51**

Space Mechanisms
Methods of Optimization for Non-Linear Problems (80-DET-65) (A) **Mr 107**

Space Missions
Preprototype Vapor Compression Distillation Subsystem Development (81-ENAs-25) (A) **S 87**
Unconventional Processes for Food Regeneration in Space: An Overview (81-ENAs-35) (A) **S 87**

Space Operations
Frictionless Devices Under Development (BTR) **Ap 57**

Space Operations Center
A Regenerative Life Support System for Space Operations Center (SOC)—A Probable First Flight Application (81-ENAs-12) (A) **S 86**

Space Radiators
On Pallet Mounted Deployable Radiator Systems (81-ENAs-29) (A) **S 88**

Space Shuttle
Advanced Microbial Check Valve Development (81-ENAs-45) (A) **S 88**
Assembly Line in Space (BTR) **O 52**
The Development of a Space Shuttle Research Animal Holding Facility (80-ENAs-39) (A) **Mr 113**
EVA Equipment for Satellite Service **Je 40**
Lightside Atmospheric Revitalization System for Space Shuttle Orbiter (81-ENAs-26) (A) **S 87**
The Push to Civilize Outer Space (NR) **O 66**
Retrieving Space Shuttle's Rocket Boosters (BTR) **Je 54**
Shuttle Astronauts Honored at White House (NR) **Jl 70**
Space Transportation Systems (AIAA Aerospace Assessment Series, Vol. 1) (CB) **Ja 104**
The Thermal Canister Approach to Instrument Thermal Design (80-ENAs-23) (A) **Mr 112**
Thermal Design of Fluid Test Cell for Growth of Crystals in Space (80-ENAs-13) (A) **Mr 111**
Thermal Design of the Space Shuttle External Tank (81-ENAs-15) (A) **S 87**

Space Sociology
The Push to Civilize Outer Space (NR) **O 66**

Space Technology
Space: The Next 25 Years (BTR) **F 50**

Space Telescope
Space Telescope Primary Mirror (BTR) **Ag 48**

Space Transportation
Space Transportation Systems (AIAA Aerospace Assessment Series, Vol. 1) (CB) **Ja 104**

Space Transportation System
EVA Equipment for Satellite Service **Je 40**

Spacecraft Systems
Magnetic Refrigeration for Spacecraft Systems (81-ENAs-47) (A) **O 101**

Spacecrafts
Application of Improved Technology to a Preprototype Vapor Compression Distillation (VCD) Water Recovery Subsystem (81-ENAs-10) (A) **S 86**
Oxygen Generation Subsystem for Spacecraft (81-ENAs-40) (A) **S 88**
Regenerable CO_2 Collection for Spacecraft Application (81-ENAs-28) (A) **O 101**

Spacelab
Aspects of Thermal Control Analysis of Spacelab (80-ENAs-12) (A) **Mr 111**
Development and Integration of the Infrared Telescope for Spacelab (81-ENAs-16) (A) **S 86**
Evaluation of Biological Models Using Spacelab (80-ENAs-38) (A) **Mr 113**
Experiment Operations in Spacelab (80-ENAs-40) (A) **Mr 113**
Life Sciences Experiments for Dedicated Spacelab Missions (80-ENAs-37) (A) **Mr 113**
Life Sciences Experiments on Spacelab 1 (80-ENAs-36) (A) **Mr 113; Je 50**
NASA-AMES Life Sciences Flight Experiments Program—1980 Status Report (80-ENAs-34) (A) **Mr 113**
Objectives of and Approach to Spacelab Thermal System Test Performed with the Engineering Model (81-ENAs-17) (A) **S 87**
Pre-and Post-Test Analysis for Spacelab Thermal System Test, Derivation of Tolerance and Comparison with Test Results (81-ENAs-18) (A) **S 87**
Spacelab Thermal System Analysis Approach and First Results of System Verification Testing (80-ENAs-21) (A) **Mr 112**
Thermal Accommodation Techniques for Payloads On-Board Spacelab (80-ENAs-20) (A) **Mr 112**

Spacelab Igloo
Environmental Control of a Pressurized Equipment Container for Shuttle Flights—The Spacelab Igloo (80-ENAs-19) (A) **Mr 111**

Spaniel, F. Plastic Strain Concentrations in Perforated Structures Subjected to Alternating Loads (81-PVP-22) (A) **Ag 80**

Spanos, P. T. D. Linear Prediction Theory for Digital Simulation of Sea Waves (81-Pet-7) (A) **My 89**

Spanwise Mixing
Spanwise Mixing in Axial-Flow Turbomachines (81-GT-57) (A) **Je 109**

Spatial Kinematics
The Curvature Theory of Line Trajectories in Spatial Kinematics (80-DET-18) (A) **F 119**

Spatial Mechanisms
The Application of Finite Element Methods to the Dynamic Analysis of Flexible Spatial and Co-Planar Linkage Systems (80-DET-87) (A) **Mr 108**
A Simple Numerical Method for the Kinematic Analysis of Spatial Mechanisms (80-DET-23) (A) **F 120**
System Analysis and Structural Criteria Concerning Diesel Locomotives (80-DET-105) (A) **Mr 110**

Spatial Motion
Instantaneous Properties of Trajectories Generated by Planar, Spherical, and Spatial Rigid Body Motions (80-DET-19) (A) **F 119**

Spear, R. C. An Approach to the Preliminary Evaluation of Closed-Ecology Life Support System (CELSS) Scenarios and Control Strategies (81-ENAs-38) (A) **O 101**

Specie Composition
Analysis of JP-4 Fire Test Data and Development of a Simple Fire Model (81-HT-17) (A) **O 94**

Specific Heat
Measurement of the Enthalpy and Specific Heat of a Be_2C-Graphite-UC_2 Reactor Fuel Material to 1980 K (80-WA/HT-54) (A) **My 84**

Spectral Density Function
Suspension Bounce Response of Canadian Maglev Vehicle Under Guideway Excitations, Part I: Deterministic Analysis (81-DET-81) (A) **D 90; Part II: Stochastic Modeling and Analysis (81-DET-82) (A) D 90**

Spectral Emissivity
On the Spectral Emissivity of Pulverized Coal and Char (81-HT-23) (A) **O 94**

Speed Control
Speed Control for Universal Motors (81-DE-1) (A) **Ag 77**

Speed Couplings
Wear and Operating Cost Reduction of Slurry Pumps by Means of Hydrodynamic Variable Speed Couplings (80-WA/MH-3) (A) **Ap 96**

Speed Governors
Precision Speed Control Systems with Throttle Disturbance Forces (81-DGP-3) (A) **My 87**

Speed Range
Optimum Bearing-Support Damping for Rotor-Bearing Systems for Maximum Stable Operating Speed Range (81-DET-69) (A) **O 104**

Speed Variations
Analysis of Drive Shaft Speed Variations in a Scotch Yoke Mechanism (80-DET-92) (A) **Mr 109**

Speed Variator
Determination of the Kinematic Characteristics of a Mechanism with a Variable Length Connecting Rod (80-DET-35) (A) **F 120**

Spence, P. W. A Practical Approach to Systems Mode Analysis (81-DET-130) (A) **N 108**

Spent Air
Arrays of Impinging Jets With Spent Fluid Removal Through Vent Holes on the Target Surface, Part 2: Local Heat Transfer (81-HT-76) (A) **O 99**

Sperman, J. H. Metric Pandora's Box? (C) **F 46**

Spheres
A Formulation for Radiative View Factors from Spheres to a Class of Axisymmetric Bodies (80-WA/HT-58) (A) **Ap 107**

Spherical Caps
The Pivoted, Spherical Cap Slider Bearing (81-Lub-4) (A) **D 95**

Spherical Cavities
Boussinesq-Papkovich Functions for Creep Around a Spherical Cavity or a Rigid Inclusion in a Gravity-Loaded Half Space (81-APM-30) (A) **S 85**
Stress Analysis of a Penny-Shaped Crack Located Between Two Spherical Cavities in an Infinite Solid (80-WA/APM-12) (A) **Ja 100**

Spherical Shells
On the Buckling Design of Spherical Shells (81-PVP-32) (A) **Ag 81**
On the Influence of a Rigid Circular Inclusion on the Twisting and Shearing of a Shallow Spherical Shell (80-WA/APM-5) (A) **Ja 99**

Spiering, G. A. Failure of a High-Pressure Vessel in Ammonia Service (81-PVP-8) (A) **Ag 79**

Spills
Contingency Planning for Liquid Pipeline Spills (81-Pet-12) (A) **My 89**
Oil Spill Countermeasures for Canada's Ice-Infested Waters (81-Pet-24) (A) **My 90**

Spin Tests
Carbon/Carbon Components for Advanced Gas Turbine Engines (81-GT-35) (A) **Je 107**

Spinal Column Deformities
The Classification of Spinal Column Deformities Resulting from Aircraft Ejection Forces (80-ENAs-44) (A) **Mr 113**

Spinodal Pressure
Corresponding States Correlation for the Spinodal and Homogeneous Nucleation Pressures (81-HT-19) (A) **O 94**

Spinup Flow
Fluid Dynamics Problem Solved (BTR) **Jl 51**

Spiral Bevel Gears
Making Large Spiral Bevel and Hypoid Gears **Ag 34**
Surface Geometry of Circular Cut Spiral Bevel Gears (81-DET-114) (A) **D 92**

Spitze, L. A. Ion-Exchange Chromatography Separation Applied to Mineral Recycle in Closed Systems (81-ENAs-21) (A) **O 100; The Preparation of Calcium Superoxide in a Flowing Gas Stream and Fluidized Bed (80-ENAs-18) (A) Mr 111**

Splines
Heat-Shrinkable Sleeve Aids in Installing Universal Joints (BTR) **Je 57**

Split Nut
The Split Nut: An Easy to Fit Nut with a Higher Inherent Strength (80-WA/DE-6) (A) **Ap 98**

Spore, J. W. A Best Estimate Radiation Heat Transfer Model Developed for TRAC-BD1 (81-HT-68) (A) **O 98**

Spray Systems
One-Dimensional Turbulent Flame Propagation in an Air-Fuel Droplet Mixture (80-WA/HT-37) (A) **Ap 105**

Spray Units
A Three-Dimensional Air-Vapor-Droplet Local In-

teraction Model for Spray Units (81-HT-18) (A) **O 94**

Spreading Rates
Effects of Nozzle Exit Turbulence on the Spreading (or Widening) Rate of Plane Free Jets (81-FE-22) (A) **S 82**

Spring, H. M. *(author)* Boiler Operator's Guide, 2nd Ed. (CB) **D 102**

Spring Coiling Machine
A Spring Coiling Machine Based on a Moving-Arbor and Retracting-Coiling-Point Concept (81-DET-1) (A) **D 88**

Spring Loaded Safety Valves
Design of Spring Loaded Safety Valves (81-PVP-40) (A) **Ag 82**

Spring Scales
More Metric Musings (C) **D 57**

Spring Winding
A Spring Coiling Machine Based on a Moving-Arbor and Retracting-Coiling-Point Concept (81-DET-1) (A) **D 88**

Springer, G. S. Elections to Fellow Grade **F 114**

Springs
Computed-Aided Design of Helical Compression Springs: Statically Loaded Springs of Round Wire with Residual Stresses Induced by Presetting Operation (80-DET-69) (A) **Mr 107**
Springs: Troubleshooting and Failure Analysis (CB) **My 92**

Spur Gear Teeth
The Determination of the Lewis Form Factor and the AGMA Geometry Factor J for External Spur Gear Teeth (80-DET-59) (A) **Mr 106**

Spur Gears
Design of Spur Gears for Improved Efficiency (81-DE-4) (A) **Ag 78**
A Method of Selecting Grid Size to Account for Hertz Deformation in Finite Element Analysis of Spur Gears (81-DET-116) (A) **N 107**
Optimal Tooth Numbers for Compact Standard Spur Gear Sets (81-DET-115) (A) **D 92**

Spurious Opening
Spurious Opening of Hydraulic-Assisted, Pilot-Operated Valves—An Investigation of the Phenomenon (81-PVP-39) (A) **Ag 82**

Squeeze Film Bearings
Unbalance Response of a Two-Spool Gas Turbine Engine with Squeeze Film Bearings (81-GT-219) (A) **JI 90**

Squeeze Film Dampers
Iterative Determination of Squeeze Film Damper Eccentricity for Flexible Rotor Systems (81-DET-87) (A) **D 90**

Squeeze Film Die Support
Squeeze Film Die Support as a Means of Noise Reduction in Forging Machines (81-DET-97) (A) **D 90**

Squeeze Films
Theoretical Effects of Rigid Particle Additives in Noncyclic Squeeze Films (81-Lub-28) (A) **D 97**

Sribnik, F. A Portable Oxygen Subsystem—Description and Preliminary Thermal Performance Prediction (80-ENAs-7) (A) **Mr 111**

Sridhar, B. N. A Spring Coiling Machine Based on a Moving-Arbor and Retracting-Coiling-Point Concept (81-DET-1) (A) **D 88**

Sridhar, K. Developing Region of Laminar Jets With Parabolic Exit Velocity Profiles (81-FE-3) (A) **Ag 82**

Srinivasan, J. LDA Measurement of Droplet Behavior Across Tie Plate During Dispersed Flow Portion of LOCA Reflood (80-WA/NE-4) (A) **Ja 96**

Stability
Development of Foil Journal Bearings for High Load Capacity and High Speed Whirl Stability (81-Lub-36) (A) **D 98**
Dynamic Stability of a Vibrating Hammer (81-DET-14) (A) **D 88**
Finite Journal Bearing with Nonlinear Stiffness and Damping. Part 2: Stability Analysis (81-DET-52) (A) **N 105**
A Numerical Approach to the Stability of Rotor-Bearing Systems (81-DET-61) (A) **D 90**
On the Stability of Equilibrium Paths Associated With Autonomous Systems (81-APM-9) (A) **S 84**

Stability Bounds
Stability Boundary for Pseudo-Random Parametric Excitation of a Linear Oscillator (81-DET-15) (A) **D 88**

Stability Considerations
Stability Considerations in Thermoelastic Contact (80-WA/APM-25) (A) **Ja 102**

Stability Criteria
Instability Mechanisms and Stability Criteria of a Group of Circular Cylinders Subjected to Cross-Flow—Part I: Theory (81-DET-21) (A) **N 104**; Part II: Numerical Results and Discussion (81-DET-22) (A) **N 105**

Staff Hiring
Staffing the Civil Service (WW) **Je 94**

Staggered Arrays
Heat Transfer Coefficients for Staggered Arrays of Short Pin Fins (81-GT-75) (A) **Je 110**

Stagnant Ambient
Analytical Model of the Round Buoyant Jet (81-FE-10) (A) **S 81**

Stagnation Pressures
Potential Flow Solution for Two Obliquely Impinging Two-Dimensional Plane Jets of Different Stagnation Pressures (81-FE-18) (A) **S 81**

Stahl, W. H. Diesel Engine Governing with Load Feedback (81-DGP-5) (A) **My 88**

Stahr, J. D. An Approach to the Preliminary Evaluation of Closed-Ecology Life Support System (CELSS) Scenarios and Control Strategies (81-ENAs-38) (A) **O 101**

Stainless Steel
Creep and Creep Recovery of 304 Stainless Steel Under Combined Stress With a Representation by a Viscous-Viscoelastic Model (80-WA/APM-10) (A) **Ja 100**
Long-Life Fatigue of Type 316 Stainless Steel of Temperatures Up to 593°C (81-Mat-2) (A) **O 102**

Stainless Steel Pipes
A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part II: Experimental Verification on a Type 304 Stainless Steel Pipe (80-WA/PVP-4) (A) **Ja 98**

Stakolich, E. G. Effect of Time-Dependent Flight Loads on Turbofan Engine Performance Deterioration (81-GT-203) (A) **JI 90**

Stall Cells
A Simple Method for Compressor Stall Cell Propagation (81-GT-73) (A) **Je 110**

Stalling Pressure Rise
Stalling Pressure Rise Capability of Axial Flow Compressor Stages (81-GT-3) (A) **Je 104**

Stalmach, D. D. Space Radiator Trade Studies for the 25-kW Power System (80-ENAs-27) (A) **Mr 112**

Standardization
Computer Standards: The Need and the Challenge **F 40**

Stange, W. A. An Investigation of Dual Mode Phenomena in a Mistuned Bladed Disk (81-DET-133) (A) **D 91**

Stapleton, D. H. *(editor)* The Engineering Drawings of Benjamin Henry Latrobe (CB) **Mr 119**

Starting Salaries
Starting Salary Offers (EN) **Je 91**

Starting Systems
A Generalized Mathematical Model to Estimate Gas Turbine Starting Characteristics (81-GT-202) (A) **JI 90**

Starved Contacts
Film Formation and Flow Characteristics at the Inlet of a Starved Contact—Theoretical Study (81-Lub-22) (A) **D 98**

Stasiowski, C. Control System for the Mainline Gas Turbine and Crude Oil Pumps on the Saudi Arabian Petroline (81-GT-33) (A) **Je 108**

State Space Approach
Nonstationary Response of Vehicles on Rough Ground—A State Space Approach (80-WA/DSC-22) (A) **Mr 116**

State Space Setting
A State Space Method for Kinematic Optimization of Mechanisms and Machines (80-DET-43) (A) **F 121**

Statfjord B Platform
LM2500 Gas Turbines for Mobil Statfjord B Platform—the North Sea (81-GT-172) (A) **JI 87**

Static Condensation
Finite Element Quasi-Static Deformation Analysis of Planar Mechanisms with External Loads Using Static Condensation (81-DET-104) (A) **N 107**

Static Forces
Motion Simulation of an Articulated Robotic Arm Subjected to Static Forces (80-DET-102) (A) **Mr 110**

Stationary Gas Turbines
Some Technological Problems Associated with the Manufacture of Blades and Vanes for Stationary Gas Turbines in the USSR (81-GT-173) (A) **JI 88**

Statistical Energy Method
Experimental Determination of Vibration Parameters Required in the Statistical Energy Analysis Method (81-DET-19) (A) **N 104**

Stator Blades
The Influence of Blade Number Ratio and Blade Row Spacing on Axial-Flow Compressor Stator Blade Dynamic Load and Stage Sound Pressure Level (81-GT-165) (A) **JI 87**

Stator Vane Rings
NASA Gas Turbine Stator Vane Ring (81-GT-208) (A) **JI 90**

Staude, R. New Features in the Design of Axial-Flow Compressors with Tandem Blades (81-GT-113) (A) **Je 113**

Steady Conduction
A Monte Carlo Procedure for Two-Dimensional Steady Conduction at Straight Convecting Boundaries (80-WA/HT-42) (A) **Ap 106**

Steady-Power
An Analysis of the Steady-Power Natural Circulation Experiments in LMFBR Plants (80-WA/HT-41) (A) **Ap 106**

Steady Rotation
Asymptotic Integration Methods Applied to Rotating Beams (80-WA/APM-32) (A) **Ja 102**

Steam
Blading Heat Transfer Considerations in a Reheat-Gas-Turbine Combined Cycle (81-GT-155) (A) **JI 86**
Putting Seawater to Work (ES) **Ap 28**
Steam Condensation on Various Gold Surfaces (81-HT-15) (A) **O 94**

Steam-Blade Cooling
The Reheat Gas Turbine with Steam-Blade Cooling—A Means of Increasing Reheat Pressure, Output and Combined Cycle Efficiency (81-GT-30) (A) **Je 106**

Steam Blowing
Steam Blowing Acceptance Criteria: It's Time a Valid Criterion Exists for Commercial Power Stations (80-JPGC/Pwr-3) (A) **F 116**

Steam Condensers
Tube to Tubesheet Joint Strengths (81-JPGC-Pwr-7) (A) **N 110**

Steam Contaminants
Corrosion Experiences in Large Steam Turbines (81-JPGC-Pwr-32) (A) **N 113**

Steam Cooling
Low Reynolds Number Forced Convection Steam Cooling Heat Transfer in Rod Bundles (80-WA/HT-59) (A) **My 84**

Steam Cycles
Combined Gas and Steam Cycle for a Gas-Cooled Solar Tower Power Plant (81-GT-102) (A) **Je 112**
Power Generation From a 770°C Heat Soruce by Means of a Main Steam Cycle, a Topping Closed Gas Cycle and an Ammonia Bottoming Cycle (81-GT-18) (A) **Je 105**

Steam Discharge
PWR S/RV Line Qualification to Gas Discharge Conditions (81-PVP-41) (A) **Ag 82**

Steam-Electric Generating Plants
A Performance Monitoring Program for Coal Fired Steam-Electric Generating Plants (81-JPGC-Pwr-22) (A) **N 112**

Steam Gasification
Heat Transfer and Reaction Rate in Steam Gasification of Coal (80-WA/HT-14) (A) **Ap 104**

Steam Generating Plants
Testing the Coal-Oil Combo (ES) **Mr 36**

Steam Generating Systems
Operating Experience of the EBR-II Steam Generating System (81-JPGC-NE-4) (A) **N 110**

Steam Generation
Industrial Fluidized Bed Steam Generation (81-IPC-Fu-2) (A) **D 101**
Overview of Major Causes of Pulverizer Failures (80-JPGC/Pwr-5) (A) **F 116**

Slag Heat Recovery System (IF) **F 61**

Steam Generator Tubes

Computer Intelligence Design for Automatic Inspection of Steam Generator Tubes (81-NE-2) (A) **S 81**

Steam Generators

Analysis of Prestressed Double-Wall Tubing for LMFBR Steam Generators (81-PVP-25) (A) **Ag 81**

Axial Restraint of Tubes in a U-Tube Type Steam Generator (81-DET-38) (A) **O 104**

Control of a Nuclear Power Plant with Once-Through Steam Generators (80-WA/DSC-24) (A) **Mr 115**

Data Analysis and Analytical Predictions of a Steam Generator Tube Bundle Flow Field for Verification of 2-D T/H Computer Code (81-JPGC-NE-1) (A) **N 109**

Double-Wall Tube Steam Generator for Breeder Nuclear Plants (81-JPGC-NE-2) (A) **N 109**

Experience with High Sodium Subbituminous Coals (80-WA/Fu-4) (A) **F 126**

3-D Finite Element Analysis for the Investigation of Feedwater Line Cracking in PWR Steam Generators (81-PVP-3) (A) **Ag 78**

Flow Model Test for the Investigation of Feedwater Line Cracking for PWR Steam Generators (81-PVP-4) (A) **Ag 79**

Method of Analysis of CRBRP Transients for the Steam Generator (81-JPGC-NE-5) (A) **N 109**

Noise Reduction in Heat Recovery Steam Generators (81-DET-101) (A) **D 91**

Sodium-Water Reaction Testing in Support of LMFBR Steam Generator Development (81-JPGC-NE-3) (A) **N 109**

U.S. Large Leak Sodium-Water Reaction Test Program (80-WA/NE-3) (A) **Ja 96**

U-Tube PWR Steam Generator Heat Transfer During a Large Loss of Coolant Accident Transient (80-WA/HT-61) (A) **My 84**

Steam Hammers

Two Goliaths with a Brain Surgeon's Touch—French Steam Hammer and American Forging Press (NR) **D 75**

Steam-Jacketed Pressure Vessel

Failure Analysis Study of a Steam-Jacketed Pressure Vessel in Coffee Decaffeination Service (81-PVP-7) (A) **Ag 82**

Steam Leakage

Influence of Service Exposure on Base and Weld Metal of 1/2 Cr-1/2 Mo-1/4 V High-Pressure Steam Inlet Piping (81-PVP-24) (A) **Ag 80**

Steam Locomotives

Cab-in-Front Articulated Locomotive Receives Landmark Status (NR) **Jl 68**

Centennial Issue: Kudos and Comments (C) **Ja 48**

ME Goes Full Steam Ahead (C) **O 50**

Steam Plants

Moving Right Along (ES) **D 25**

Steam Turbine Discs

Procedures for Estimating the Probability of Steam Turbine Disc Rupture from Stress Corrosion Cracking (81-JPGC-Pwr-31) (A) **D 92**

Steam Turbine Topping

A Blossoming Market (ES) **Je 25**

Steam Turbines

Acoustic Emission Monitoring of Steam Turbines (81-JPGC-Pwr-16) (A) **N 111**

Corrosion Experiences in Large Steam Turbines (81-JPGC-Pwr-32) (A) **N 113**

Development of a Rational Procedure for Monitoring Steam Turbine Performance (81-JPGC-Pwr-20) (A) **N 112**

Interim Report on Water Induction Detection Studies (81-JPGC-Pwr-27) (A) **N 113**

Operational Experience with Large Steam Turbines in Nuclear Power Plants (80-JPGC/Pwr-4) (A) **F 116**

A Simplified ASME Acceptance Test Procedure for Steam Turbines (80-JPGC/Pwr-15) (A) **F 117**

Turbine Modeling for Power Plant Controller Design (80-WA/DSC-11) (A) **Mr 115**

Utilization of Gas Turbine for District Heating Applications (81-GT-214) (A) **Jl 91**

Steam/Water Solar Receivers

The Development and Design of Steam/Water Solar Receivers for Commercial Application (81-Sol-4) (A) **S 80**

Steel

Embrittlement of 1 1/4 Cr-1/2 Mo Steels in High-Temperature Service (81-Mat-3) (A) **O 102**

Steel for Deep Submersibles (IF) **Je 73**

Wear and Friction of Nitrogen Ion Implanted Steel (81-Lub-20) (A) **D 97**

Steel Blade Tip

Single Pass Rub Phenomena—Analysis and Experiment (81-Lub-55) (A) **D 100**

Steel Cans

Steel Can Cornucopia (ES) **Jl 18**

Steel Grit

Single Grit Simulation of the Abrasive Machining of Wood (80-WA/Prod-2) (A) **My 82**

Steel Industries

World Steel Industry Outlook (IF) **My 54**

Steel Wire

Selecting Welded Wire Assemblies for Strength (BTR) **Ja 56**

Steel Wire Contest Winner (EN) **Jl 74**

Steel Wool Catalyst

The Use of Nickel and Cobalt Catalysts in a Bosch Reactor (80-ENAs-15) (A) **Mr 111**

Steele, C. R. Asymptotic Integration Methods Applied to Rotating Beams (80-WA/APM-32) (A) **Ja 102**; Nonlinear Corrections for Edge Bending of Shells (80-WA/APM-15) (A) **Ja 100**

Steele, H. Thermal Storage Requirements for Parabolic Dish Solar Power Plants (80-WA/Sol-21) (A) **Ap 94**

Steele, W. G., Jr. Thermal Performance Analysis of an MHD Simulation Test Facility (80-WA/HT-13) (A) **Ap 104**

Steen, P. *(author)* Radioactive Waste from Nuclear Power Plants (CB) **D 102**

Steiger, H. A. Slow-Speed Two-Stroke Diesel Engine Tests Using Coal-Based Fuels (81-DGP-12) (A) **My 88**

Stein, D. S. Active Thermal Control for an Advanced Power Platform (81-ENAs-31) (A) **S 87**

Stemler, W. H. The Crane Truth (C) **My 42**

Stengel, J. W. Personal Equipment Development for Use in Underground Mining (81-ENAs-48) (A) **O 101**

Stephenson, J. W. Elections to Fellow Grade **Mr 103**

Stepka, F. S. Evaluation of a Method for Heat Transfer Measurements and Thermal Visualization Using a Composite of a Heater Element and Liquid Crystals (81-GT-93) (A) **Je 112**; Thermal and Flow Analysis of a Convection, Air-Cooled Ceramic Coated Porous Metal Concept for Turbine Vanes (81-HT-48) (A) **O 97**

Sterilizing

Novel Sterilizing Process (BTR) **D 59**

Stern, D. The Spine of the Root Locus for the Viscous Damper (81-DET-4) (A) **O 102**

Sternlicht, B. The Rebirth of the Rankine Cycle **Ja 41**

Stetz, T. T. Flow Through Axially Aligned Sequential Apertures of the Orifice and Borda Types (81-HT-79) (A) **O 99**

Stevans, W. Supersonic Stall Flutter of High-Speed Fans (81-HT-184) (A) **Jl 89**

Stewart, D. C. *(author)* Handling Radioactivity: A Practical Approach for Scientists and Engineers (CB) **Ag 85**

Stewart, I. J. Opinion on Opinion Pages (C) **Ap 56**

Stewart, M. B. Droplet Dynamics in Creeping Flows (81-APM-29) (A) **S 85**

Stewart, W. E., Jr. Experimental Free Convection from an Inclined Cylinder (80-WA/HT-29) (A) **Ap 105**

Stewart, W. F. Liquid Hydrogen as a Vehicular Fuel: An Evaluation **My 24**

Stewart, W. L. NASA Research in Aeropropulsion (81-GT-96) (A) **Je 111**; **D 26**

Stidger, R. W. *(author)* The Competence Game: How to Find, Use, and Keep Competent Employees (CB) **O 106**

Stiglich, J. J. Advanced Coating for Gas Turbine Materials (81-GT-85) (A) **Je 111**

Stiller, P. H. Offshore Wind Economics (C) **My 43**

Stimulated Emission

Shortest Optical Pulse (BTR) **S 53**

Stinson, W. H. Effect of Turbine Design and Operation Factors on Plant Heat Rate (81-JPGC-Pwr-36) (A) **D 93**

Stirling Engine

An Experimental Investigation of a Low Temperature Ratio Stirling Engine (81-DGP-11) (A) **My 88**

Measurement of Oil Film Thickness For Application to Elastomeric Stirling Engine Rod Seals (81-Lub-9) (A) **D 96**

Stirling Engine for Solar Thermal Power (BTR) **Ap 60**

Stochastic Properties

Stochastic Properties of Compartment Models (80-WA/DSC-37) (A) **Mr 117**

Stofan, P. E. A Chamber Design for Closed Ecological Systems Research (81-ENAs-37) (A) **O 100**

Stokes, B. O. Unconventional Processes for Food Regeneration in Space: An Overview (81-ENAs-35) (A) **S 87**

Stone, D. Thermal Fatigue Analysis of a Railcar Wheel Under Drag Braking (80-WA/DE-4) (A) **Ap 98**

Stone, D. H. Cyclic Behavior of Class U Wheel Steel (80-WA/RT-9) (A) **F 126**

Storage

Comparison of Liquid Solar Thermal Storage Subsystems in the National Solar Data Network (80-WA/Sol-36) (A) **Ap 95**

Economic Considerations for Automating Unit Handling and Storage (80-WA/MH-6) (A) **Ap 96**

Storage Devices

Enhanced Heat Conduction in Phase-Change Thermal Energy Storage Devices (80-WA/HT-45) (A) **Ap 106**

Storage Furniture

Marketplace Developments in Storage Furniture, Racks and Shelves (80-WA/MH-11) (A) **Ap 96**

Storage Ring

Fifth Quark, "Bottom," Makes Debut (BTR) **Jl 50**

Storage Systems

Automated Storage/Retrieval Systems: A State-of-the-Art Update (80-WA/MH-4) (A) **Ap 96**

Storage Units

The Effect of Flow Maldistribution on the Thermal Response of Packed-Bed Converters and Thermal-Energy Storage Units (81-HT-59) (A) **O 98**

Stored Energy

Aquifers Store Waste Energy (BTR) **Mr 70**

Stored Energy of Gamma-Irradiated 97 Percent Pure Rocksalt (80-WA/HT-53) (A) **Ap 106**

Storm, R. S. Fabrication of Injection Molded Sintered Alpha SiC Turbine Components (81-GT-161) (A) **Jl 86**

Stolt, S. J. Response of Two Nuclear Power Plant Valves to Dynamic Excitation (81-DET-67) (A) **D 90**

Straight Convecting Boundaries

A Monte Carlo Procedure for Two-Dimensional Steady Conduction at Straight Convecting Boundaries (80-WA/HT-42) (A) **Ap 106**

Straight Cracks

Approximate Description of Crack Kinking and Curving (81-APM-22) (A) **S 85**

Straight Line Mechanism

Analysis of a Classical Straight Line Mechanism Using Interactive Graphics (81-DET-105) (A) **N 107**

Strain, R. V. Operational Safety and Reliability Research at EBR-II (81-JPGC-NE-11) (A) **N 110**

Strain

Strain Concentration Factor as a Function of Strain in a Design Application (81-DE-5) (A) **Ag 78**

Strain Gage

Development of the Self-Temperature Compensated Resistance Strain Gage Used up to 700°C (81-GT-118) (A) **Je 113**

Strain-Hardening

On the Characterization of Strain-Hardening in Plasticity (81-APM-26) (A) **S 85**

Strang, J. E. The Cabin Air Conditioning and Temperature Control System for the Boeing 767 and 757 Airplanes (80-ENAs-5) (A) **Mr 110**

Stratification

Comparison of Liquid Solar Thermal Storage Subsystems in the National Solar Data Network (80-WA/Sol-36) (A) **Ap 95**

Streamline Curvature

Correction for Streamline Curvature and Coriolis Force in a Boundary Layer Integral Method (81-GT-97) (A) **Je 111**

Streamline Curvature Throughflow
Nonequilibrium Streamline Curvature Throughflow Calculations in Wet Steam Turbines (81-Gr/GT-3) (A) **O 101**
Streamsurface Theory
Application of Lifting Line Theory to Streamsurface Theory in Subsonic Flow (81-GT-166) (A) **JI 86**
Streamwise Flow
Streamwise Flow and Heat Transfer Distributions for Jet Array Impingement with Crossflow (81-GT-77) (A) **Je 110**
Street, R. L. Comparison of Profiles and Fluxes of Heat and Momentum Above and Below an Air-Water Interface (80-WA/HT-68) (A) **Ap 107**
Stresino, E. F. Free Enterprise and Energy (C) **Ja 49**
Stress
Classification of Clamp-Induced Stresses in Thin-Walled Pipe (81-PVP-17) (A) **Ag 80**
Determination of Vibration Amplitudes and Stresses Using the Holography Interference Techniques and Finite Element Method (81-DET-132) (A) **N 108**
Evaluation of Methods for the Treatment of Mean Stress Effects on Low-Cycle Fatigue (81-GT-122) (A) **Je 114**
Predicting Lifetime of Cast Parts (BTR) **Ja 59**
Qualification of Induction Heating Stress Improvement for Mitigation of Stress Corrosion Cracking (81-PVP-13) (A) **Ag 79**
Simplified Solution for Stresses and Deformations (81-Lub-54) (A) **D 100**
The Use of Multichannel Radio Telemetering Techniques for Stress and Temperature Measurements in Gas Turbine Rotating Components (81-GT-116) (A) **Je 112**
Stress Corrosion
Procedures for Estimating the Probability of Steam Turbine Disc Rupture from Stress Corrosion Cracking (81-JPGC-Pwr-31) (A) **D 92**
Stress Distributions
Finite Element Stress Analysis of Planar Elastic Systems Having Press Fitted Units (80-DET-98) (A) **Mr 109**
Stress Elements
Planar Polar Stress Elements with Regular and Irregular Joint Freedoms for Mechanical Design (80-DET-71) (A) **Mr 107**
Stress Fluctuation
Stress Fluctuation on High Speed Mechanisms (80-DET-21) (A) **F 119**
Stress Range
Implication of Stress Range for Inelastic Analysis (81-PVP-34) (A) **Ag 82**
Stress Waves
Theoretical and Experimental Investigation of Stress Waves at a Junction of Three Bars (81-APM-16) (A) **S 84**
Strite, M. A. Equivalent Performance Testing of Multisection Compressors (81-GT-150) (A) **JI 86**
Strom, S. S. MHD Steam Power—Promise, Progress, and Problems **S 30**
Strong, B. R., Jr. PWR S/RV Line Qualification to Gas Discharge Conditions (81-PVP-41) (A) **Ag 82**
Strong, R. T. Implementation of Solution Rectification Techniques in an Interactive Linkage Synthesis Program (80-DET-91) (A) **Mr 109**
Stroom, C. Simulation of the Transport Time Delay in Fluid Loops by Means of a Corrective Heat Flux (80-ENAs-22) (A) **Mr 112**
Structural Analysis
Conceptual Designs and Preliminary Analysis of Structures (CB) **N 115**
Linkage Characteristic Polynomials: Definitions, Coefficients by Inspection (80-DET-8) (A) **Mr 106**
Structural Ceramics
Sintering Microstructure and Properties of Si_3N_4 and SiC Based Structural Ceramics (81-GT-220) (A) **JI 91**
Structural Changes
Mathematical Modelling for Predicting Effects of Structural Changes in Machine Tools (81-DET-39) (A) **O 104**
Structural Components
Experimental Determination of Vibration Parameters Required in the Statistical Energy Analysis Method (81-DET-19) (A) **N 104**
Structural Damping
Compilation and Compression of Mathematical Model for a Machine Transmission (80-DET-104) (A) **Mr 110**
Structural Design
Results of a Government and Industry Survey of the Heating Methods Used to Determine Missile Structural Temperatures (80-ENAs-26) (A) **Mr 112**
Structural Failures
Fatigue Design in Mining Size Reduction Equipment (81-PVP-9) (A) **Ag 79**
Structural Materials
Glass-Reinforced Concrete for Solar Energy Devices (BTR) **S 51**
Structural Optimization
Application of Structural Optimization Technique to Reduce the External Vibrations of a Gas-Turbine Engine (81-DET-143) (A) **N 108**
Structural Response
Comparison of LMFBR Piping Response Obtained Using Response Spectra and Time History Methods (81-PVP-28) (A) **Ag 80**
Structural Vibration
The Damping of Structural Vibration by Controlled Interfacial Slip in Joints (81-DET-86) (A) **N 106**
Struts
Optimum Strut-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) (A) **Ag 83**
Stuckey, W. C. The Tearing of Plain Woven Fabrics Made from Ring, Open and Twistless and Twisted Bonded Yarns (80-Tex-4) (A) **F 122**
Student Designer
Steel Wire Contest Winner (EN) **JI 74**
Student Sections
Helping the Student Section Help Itself **Je 54**
Studley, B. C. The Role of Planning and Scheduling: Construction vs. Startup for Commercial Power Stations (81-JPGC-Pwr-12) (A) **N 111; Steam Blowing Acceptance Criteria: It's Time a Valid Criterion Exists for Commercial Power Stations (80-JPGC/Pwr-3) (A) F 116**
Studley, G. L. Government as the Problem (C) **Ap 54**
Stultz, J. W. Results of a Government and Industry Survey of the Heating Methods Used to Determine Missile Structural Temperatures (80-ENAs-26) (A) **Mr 112**
Subbituminous Coal
Experience with High Sodium Subbituminous Coals (80-WA/Fu-4) (A) **F 126**
Subcooled Liquid Flows
Sizing Valves for Two-Phase and Subcooled Liquid Flows (80-WA/HT-64) (A) **My 85**
Sub-Cooling
Improvement in Performance and Availability of Currently Operating MSR's (80-JPGC/Pwr-12) (A) **F 117**
Subdesign Conditions
Some Fundamental Relationships for Tubular Heat Exchanger Thermal Performance (81-HT-33) (A) **O 95**
Submarines
Atmospheric Monitoring for Submarine Applications (80-ENAs-33) (A) **Mr 113**
Carbon Dioxide Effects on Submarines (80-ENAs-32) (A) **Mr 113**
A History of the Naval Research Laboratory Contributions to Submarine Life Support Systems (80-ENAs-29) (A) **Mr 112**
Submerged Outlets
Draining of Tanks with Submerged Outlets or Without Vacuum-Relief (81-FE-21) (A) **S 82**
Submersibles
Atmospheric Monitoring in Submersibles (80-ENAs-31) (A) **Mr 113**
Subsea Production Systems
1981 Offshore Technology Conference, review (NR) **Ag 57**
Subsidiary Evaluation Criteria
A Method for Evaluating the Relative Worth of Research and Development Tasks to Prioritize Them (80-WA/Mgt-4) (A) **Ja 103**
Subsonic Flow
Application of Lifting Line Theory to Streamsurface Theory in Subsonic Flow (81-GT-166) (A) **JI 86**
Subsynchronous Vibration
Analysis and Identification of Subsynchronous Vibration for a High Pressure Parallel Flow Centrifugal Compressor (81-DET-57) (A) **N 105**
Four Pad Tilting Pad Bearing Design and Application for Multistage Axial Compressors (81-Lub-12) (A) **D 96**
Sucala, F. Determination of the Kinematic Characteristics of a Mechanism with a Variable Length Connecting Rod (80-DET-35) (A) **F 120**
Suction Pump
Diver-Steadying Device (BTR) **F 54**
Suction Surfaces
Boundary Layer Development on Turbine Airfoil Suction Surfaces (81-GT-204) (A) **JI 90**
Suganami, T. A Study on Thermal Behavior of Large Seal-Ring (81-Lub-27) (A) **D 97**
Sugano, H. Factors Affecting Blade Ash-Erosion in Axial Induced Draft Fans (80-JPGC/Pwr-7) (A) **F 116**
Sugawa, O. Smoke Filling in an Enclosure (81-HT-8) (A) **S 89**
Sugimoto, K. Determination of Extreme Distances of a Robot Hand—Part 1, A General Theory (80-DET-57) (A) **Mr 107; Part 2, Robot Arms with Special Geometry (80-DET-58) (A) Mr 106**
Sulfur
Moving Right Along (ES) **D 25**
Sulfur Trioxide
Formation of SO_3 in Gas Turbines (81-GT-42) (A) **Je 106**
Sullivan, W. N. VAWTDYN—A Numerical Package for the Dynamic Analysis of Vertical Axis Wind Turbines (80-WA/Sol-18) (A) **Ap 94**
Sun Rays
... Sunlight ... (C) **Ag 42**
Sunada, W. The Application of Finite Element Methods to the Dynamic Analysis of Flexible Spatial and Co-Planar Linkage Systems (80-DET-87) (A) **Mr 108**
Sundaram, R. K. Parametric Effects on Vapor Non-Equilibrium in Post-Dryout Heat Transfer (80-WA/HT-50) (A) **Ap 107**
Sundararajan, C. A Double Summation Procedure for the Combination of Seismic Responses of Multiple-Excited Piping Systems (80-WA/PVP-1) (A) **Ja 97**
Sunflower Seed Hulls
Sunflower Seed Hulls as Supplementary Fuel to Coal-Fired Power Plants (81-JPGC-Fu-10) (A) **D 94**
Sunlight
Hydrogen from Sunlight (ES) **My 19**
Solar-Powered Plane to Make First Paris-to-London Flight (NR) **Je 81**
Sunshade Radiators
Sunshade/Radiative Cooler for IRAS Infrared Astronomical Satellite (81-ENAs-3) (A) **S 86**
Suntracker Concentrator
Sun-Tracking Device (IF) **Mr 76**
"Super Series" System
"Super Series" Wheel Creep Control System (80-WA/RT-3) (A) **F 125**
Super Waspaloy
Strengthening Mechanisms and Process Controls for Super Waspaloy (81-GT-175) (A) **JI 88**
Supercavitation
Supercavitating Cavity Observations by Means of Laser Velocimeter (80-WA/FE-5) (A) **My 85**
Superchargers
New Correlations of the Two-Dimensional Turbine Cascade Aerodynamic Performance (81-GT-128) (A) **JI 84**
Superconducting Generators
Superconducting Generators from Conception to Power Station **Ap 44**
Superconducting Unit
Fast, Faster, and Fastest (ES) **My 18**
Superconductivity
Superconducting Particle Accelerator (BTR) **O 80**
Supercritical Rotors
Experiments on the Dynamic Behavior of a Supercritical Rotor (81-DET-59) (A) **D 89**
Supercritical Steam Generators
Steady-State Digital Computer Model for Supercritical Steam Generators (81-JPGC-Pwr-4) (A) **N 110**
Superelements
Analysis of Plate Vibrations Using Superelements (81-

DET-65) (A) **N 106**

Superheated Steam Turbine
Development of a Rational Procedure for Monitoring Steam Turbine Performance (81-JPGC-Pwr-20) (A) **N 112**

Superheaters
Operating Experience of the EBR-II Steam Generating System (81-JPGC-NE-4) (A) **N 110**

Superhybrid Composite Blades
Superhybrid Composite Blade Impact Studies (81-GT-24) (A) **Je 106**

Superoxides
The Preparation of Calcium Superoxide in a Flowing Gas Stream and Fluidized Bed (80-ENAs-18) (A) **Mr 111**

Superplants
Superplants for Power Generation: A Way to Improve Coal Utilization (80-WA/CD-2) (A) **Ja 97**

Supersonic Flows
Aeroelastic Characteristics of a Cascade of Mistuned Blades in Subsonic and Supersonic Flows (81-DET-122) (A) **N 108**

Supersonic Stall Flutter
Supersonic Stall Flutter of High-Speed Fans (81-GT-184) (A) **Jl 89**

Supersonic VSTOL Aircraft
Establishing Cruise-Engine Cycle Payoffs for a Supersonic VSTOL Aircraft (81-GT-100) (A) **Je 112**

Supplemental Electric Generation
Rural Energy Needs (ES) **Mr 37**

Supplemental Fuel
Thirty Percent Fuel Saving by Adding Combustion Within Gas Turbine (81-JPGC-GT-4) (A) **D 94**

Supply Systems
Nitrogen Supply System Based on Hydrazine Dissociation (81-ENAs-27) (A) **O 101**

Supporting Structure
Acceleration of Unbalanced Rotor Through the Resonance of Supporting Structure (81-APM-24) (A) **S 85**

Supral
Superplastic Aluminum Alloy (IF) **F 61**

Suresh, S. Evaluation of Polymers as Lubricants in the Extrusion of Aluminum (81-Lub-21) (A) **D 97**

Surface Damage
The Morphology of Surface Damage Caused by Friction (81-Lub-14) (A) **D 97**

Surface Ellipticity
Effect of Surface Ellipticity on Dynamically Loaded Cylindrical Bearings (81-Lub-1) (A) **D 96**

Surface Geometry
Surface Geometry of Circular Cut Spiral Bevel Gears (81-DET-114) (A) **D 92**

Surface Heating Rates
In-Situ Calibration of Flight Heat Transfer Instrumentation (81-ENAs-13) (A) **S 86**

Surface Motion
Elastodynamic Analysis of an Edge Crack (80-WA/APM-6) (A) **Ja 100**

Surface Pressure
Elastostatic Far-Field Behavior in a Layered Half Space Under Surface Pressure (80-WA/APM-7) (A) **Ja 100**
Statistical Properties of the Surface Pressure Distribution on a Yawed Cylinder in a Turbulent Flow Field (81-DET-35) (A) **O 103**

Surface Renewal
Comparisons of Surface-Renewal Predictions with Field Data (80-WA/HT-67) (A) **My 85**

Surface Roughness
A Data Dependent Systems Approach to Dynamics of Surface Generation in Turning (80-WA/Prod-25) (A) **My 83**
Effect of Surface Roughness on Elastohydrodynamic Line Contact (81-Lub-23) (A) **D 98**
In-Process Measurement of Surface Roughness in Turning by Laser Beams (80-WA/Prod-17) (A) **My 83**

Surface Singularity Methods
Solution of Plane Cascade Flow Using Improved Surface Singularity Methods (81-GT-169) (A) **Jl 87**

Surface Tension
Surface Tension Effects During Condensation on a Horizontal Tube (81-HT-26) (A) **O 95**

Surge
Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) (A) **Ag 82**

Suryanarayana, N. V. Temperature Variation in the Absorber Plate of an Air Heating Flat Plate Solar Collector (80-WA/Sol-2) (A) **Ap 92**

Suspension Bounce
Suspension Bounce Response of Canadian Maglev Vehicle Under Guideway Excitations, Part I: Deterministic Analysis (81-DET-81) (A) **D 90**; Part II: Stochastic Modeling and Analysis (81-DET-82) (A) **D 90**

Suspension Systems
Suspension System Synthesis for Mass Transport Vehicles with Prescribed Dynamical Behavior (81-DET-44) (A) **O 104**

Suspensions
Deposition of Suspensions in Turbulent Flow Over a Tilted Flat Plate (81-FE-28) (A) **S 82**

Sutsch, A. Small Gas Turbine with Large Parabolic Dish Collectors (81-GT-201) (A) **Jl 90**

Sutton, S. Fracture Criteria of Fibrous Laminated Composites Under In-Plane Multidirectional Loading (80-WA/APM-9) (A) **Ja 100**

Svalbonas, V. Fatigue Design in Mining Size Reduction Equipment (81-PVP-9) (A) **Ag 79**

Svard, C. D. Design Procedure and Applications of Solar-Assisted Series Heat Pump Systems (80-WA/Sol-9) (A) **Ap 93**

Svenson, E. B., Jr. Portable Computerized Power Plant Equipment Testing **Mr 58**

Sverdrup, E. F. A Theory for Fine Particle Deposition in 2-D Boundary Layer Flows and Application to Gas Turbines (81-GT-54) (A) **Je 108**

Svoboda, J. V. Hybrid Computer-Aided Design of a Hydrostatic Vehicle Drive with Energy Accumulator (80-DET-49) (A) **F 121**

Swanson, S. R. Approximate Laplace Transform Inversion in Dynamic Viscoelasticity (80-WA/APM-29) (A) **Ja 102**

Swedish Utilities
Safety-Minded Swedes (ES) **F 23**

Sweet, L. M. Evaluation of Time-Duration Dependent Wheel Load Criteria for Wheelclimb Derailment (80-WA/DSC-21) (A) **Mr 116**

Swenson, E. L. Recent Pilot-Scale Development of a Low-NO_x, "Air-on-Wall" Corner-Fired Combustion System (81-JPGC-APC-4) (A) **D 100**

Swirl
The Influence of Swirl on the Flow Characteristics of a Reciprocating Piston-Cylinder Assembly (80-WA/FE-8) (A) **My 86**

Swirl-Stabilized Combustors
An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) (A) **Je 106**

Swirling Inlet Flow
Optimum Strut-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) (A) **Ag 83**

Switches
Heat Switch Has No Moving Parts (BTR) **My 51**

Swivels
A High-Pressure Swivel for Natural Gas Service and Oscillating Motion in a Marine Environment (81-Pet-19) (A) **My 90**

Sykes, R. N. The Planning and Execution of Engineering Work in a Project Environment (80-WA/Mgt-2) (A) **Ja 102**

Synchronous Machines
Machining Parameter Optimization for Multistation Synchronous Machines (80-DET-60) (A) **Mr 107**

Synchronous Whirl
Optimum Journal Bearing Parameters for Minimum Rotor Unbalance Response in Synchronous Whirl (81-DET-55) (A) **N 105**

Synchrotron
Fifth Quark, "Bottom," Makes Debut (BTR) **Jl 50**

Synder, A. F. The Coal Fired Producer Gas (CFPG) Engine—An Alternative for Power and Propulsion in the 80's (81-Pet-17) (A) **My 90**

Synfuels
Alternative Fuels Study (IF) **Je 73**
The ASPEN Simulator (ES) **D 25**
Solar, Nuclear, Coal, Synfuels Proponents Propose Diverse Energy Solutions (NR) **S 84**
Synfuels Development (ES) **Mr 36**
Turbine Blades for Synfuels (ES) **O 27**

Synthesis Techniques
The Cam-Link Mechanism: A General Overview and Specific Application to Rigid Body Motion (80-DET-15) (A) **F 119**

Synthesizers
The Theory and Practice of Management: Part Art, Part Science (80-WA/Mgt-1) (A) **Ja 102**

Synthetic Bird Model
The Development of a Substitute Bird Model (81-GT-23) (A) **Je 106**

Synthetic Fuels
Advanced Fossil Fuel Systems (ES) **S 24**
COM-Powered Diesels (ES) **Mr 37**
Effect of Water Injection for NO_x Reduction with Synthetic Liquid Fuels Containing High Fuel-Bound Nitrogen in a Gas Turbine Combustor (81-GT-51) (A) **Je 108**
Evaluation of Concepts for Controlling Exhaust Emissions from Minimally Processed Petroleum and Synthetic Fuels (81-GT-157) (A) **Jl 86**
Synthetic Fuels Center (EN) **My 70**
Versatile Synthetic Methanol (C) **Mr 64**

Synthetic Liquid Fuels
ANSI B133.7 Survey of Gas Turbine Synthetic Liquid Fuels (81-JPGC-GT-8) (A) **D 95**
The Merits of Methanol (BTR) **Je 63**

Synthetic Lubricants
Lubrication Fundamentals (CB) **N 116**

System Rigidity
Experimental Investigation of the Effect of System Rigidity on Wear and Friction-Induced Vibrations (81-Lub-3) (A) **D 95**

Systems Analysis Techniques
Application of Systems Analysis Techniques in Optimizing Gas Life Installations (81-Pet-33) (A) **My 91**

Systems Concepts
Unit Handling—Problems and Opportunities (80-WA/MH-7) (A) **Ap 96**

Systems Mode Analysis
A Practical Approach to Systems Mode Analysis (81-DET-130) (A) **N 108**

Sze, E. The Potential Role of Aerobic Biological Waste Treatment in Regenerative Life Support Systems (81-ENAs-20) (A) **S 87**

Szetela, E. J. A Heat Exchanger Computational Procedure for Temperature-Dependent Fouling (81-HT-75) (A) **O 98**; A Study of External Fuel Vaporization (81-GT-154) (A) **Jl 86**

T

Tabakoff, W. Improved Particle Trajectory Calculations Through Turbomachinery Affected by Coal Ash Particles (81-GT-53) (A) **Je 108**

Tabb, E. S. Industrial Waste Heat Recovery (80-WA/HT-17) (A) **Ap 104**

Taconite Facility
Characterization of Dust and Emissions from a Taconite Bulk Handling Facility (80-WA/APC-2) (A) **Ap 102**

Tactile Sensors
The Basic Motion Regulation System for a Quadruped Walking Vehicle (80-DET-34) (A) **F 120**

Tadjbakhsh, I. G. Stability of Motion of Elastic Planar Linkages With Application to Slider Crank Mechanism (81-DET-6 (A) **N 104**

Tadros, R. N. Dynamic Response of Blades and Vanes to Wakes in Axial Turbomachinery (81-DET-33) (A) **O 103**

Tagging
Nitrogen-Analysis Technique (BTR) **N 78**

Taghavi-Tafreshi, K. Shape Change of an Initially Vertical Wall Undergoing Condensation Driven Melting (81-HT-12) (A) **S 89**

Tasahashi, A. Hydraulic Resistance Effects on Hydraulic Elevator (80-DET-112) (A) **Mr 110**

Takahashi, Y. Editor, Retiring (C) **N 73**

Takamatsu, T. Embrittlement of 11/4 Cr-1/2 Mo Steels in High Temperature Service (81-Mat-3) (A) **O 102**

Takeuchi, T. Analytical Consideration of Fuel Economy and Dynamics Response of a Regenerative High Temperature Automobile Gas Turbine—Part II (81-GT-218) (A) **Jl 91**

Takeya, K. Outline of Plan for Advanced Research Gas Turbine (81-GT-28) (A) **Je 107**; Transient Torque Produced in Main Shaft of Electric Hoist During Motor Start-Up and Emergency Brake Operations (81-DET-60) (A) **N 105**
Taki, A. Mechanisms and Characteristics of Combustion of Water-in-Oil Emulsion Sprays (80-WA/HT-36) (A) **Ap 105**
Talbot, T. F. Winch Design—Good or Bad (80-WA/DE-11) **Ap 98**
Talkington, H. R. *(author)* Undersea Work Systems (Ocean Engineering Series, Vol. 1) (CB) **Ag 85**
Tallian, T. E. A Unified Model for Rolling Contact Life Prediction (81-Lub-42) (A) **D 99**
Talty, T. F. Utility Experience with an Availability Improvement Program: Status and Current Direction (80-JPGC/Pwr-18) (A) **F 117**
Tampa Electric Co.
The Technical/Economic Issues and Reliability Requirements for Tampa Electric Company's Big Bend Unit #4 FGD System (81-JPGC-Pwr-35) (A) **D 93**
Tanabe, K. IM 2000 Marine Gas Turbine Design, Development and Testing (81-GT-196) (A) **Jl 89**
Tanaka, K. A Dislocation Model for Fatigue Crack Initiation (81-APM-3) (A) **S 83**
Tanaka T. Effects of Camber Variation on Performance Characteristics of a High Specific Speed Propeller Pump (81-FE-26) (A) **S 82**
Tandem Blades
New Features in the Design of Axial-Flow Compressors with Tandem Blades (81-GT-113) (A) **Je 113**
Tang, J. H. K. Stability Analysis of Rotor Lifting Arrangement (80-WA/DE-10) (A) **Ap 98**
Tangential Coordinates
Equations for Four-Bar Line-Envelopes (80-DET-40) (A) **F 121**
Tanks
Draining of Tanks with Submerged Outlets or Without Vacuum-Relief (81-FE-21) (A) **S 82**
Tar Sands
Commercializing the Nonconventional (ES) **F 23**
Tarasuk, J. D. Secondary Flow Structure in Combined Free and Forced Convection in a Horizontal Isothermal Tube (81-HT-36) (A) **O 96**
Tare Losses
Design of Spur Gears for Improved Efficiency (81-DE-4) (A) **Ag 78**
Targets
A Model to Estimate Forces on Conical Penetrators into Dry Porous Rock (81-APM-15) (A) **S 84**
Tárrago, J. A. A Computer Method for the Finite Displacement Problem in Spatial Mechanisms (81-DET-110) (A) **N 107**
Tatum, C. B. Technology Assessment: A Background Review (80-WA/Mgt-3) (A) **Ja 102**
Tauber, T. Full-Flow Debris Monitoring in Gas Turbine Engines (81-GT-60) (A) **Je 109**
Taut Moored Platform
The Dynamics of Tension Leg Platforms in Waves (81-Pet-27) (A) **My 90**
Tawfig, S. S. Bond Graph Models for Simulating HVAC Systems (80-WA/Sol-16) (A) **Ap 93**
Tax Cuts
Reagan Cuts Figure (WW) **S 72**
Taxes
Taxing Americans Overseas (WW) **Jl 76**
Taylor, D. L. Squeeze Film Die Support as a Means of Noise Reduction in Forging Machines (81-DET-97) (A) **D 90**
Taylor, J. R. Design and Development of the Combustor Inlet Diffuser for the NASA/GE Energy Efficient Engine (81-GT-129) (A) **Jl 84**
Teaching
Engineering Education Goals (C) **F 48**
Teaching Facilities
Faculty and Facilities Challenge Engineering Ed (EN) **Je 91**
Teaching Materials
Kids Teach Parents Metrics (NB) **S 70**
Tearing
The Tearing of Plain Woven Fabrics Made from Ring, Open and Twistless and Twisted Bonded Yarns (80-Tex-4) (A) **F 122**
Tech Editor
Tech Editor Sought for Applied Mechanics Journal (NR) **N 90**
Tech Perspective
ASME's Boiler and Pressure Vessel Code as an International Standard **Ag 69**
Praise for Perspective (C) **O 50**
Tech Ex '81
Awards Competition at International Technology Fair (NR) **F 62**
Technical Aid
Technical Aid for Third World (IF) **N 82**
Technical Communication
Technically—Write! (CB) **N 116**
Technical Community
No Man Is an Island (80-WA/Mgt-5) (A) **Ja 103**
Technical Competence
Professional Courtesy Needed (C) **Jl 46**
Technical Drawings
The Engineering Drawings of Benjamin Henry Latrobe (CB) **Mr 119**
Technical Facts
Against Mumbo Jumbo (C) **Jl 46**
Technical Graduates
Economic Outlook Promising for Many College Grads (EN) **F 66**
Technical Information
Egypt and U.S. Shape Engineering Alliance (NB) **D 78**
Technical Innovation
A National Materials Policy (STV) **Jl 77**
The Professor with the Innovative Touch **S 26**
Technical Literature
Japanese Scientific and Technical Literature: A Subject Guide (CB) **N 115**
Lubrication Fundamentals (CB) **O 106**
Technical Material
In the Matter of Reading Matter (C) **D 57**
Technical Papers
In the Matter of Reading Matter (C) **D 57**
Technical Positions
Can ASME Take Consensus Stands? (C) **My 43**
Technical Professional
Congress and the Technical Professional (WW) **Mr 86**
Technical Reading Matter
Wanted: More Technical Reading Matter (C) **S 49**
Technical Views
Storm Over S-T View (C) **Ja 50**
Technicians
Engineering Technicians (C) **O 50**
Technological Breakthrough
An Age of Innovation: The World of Electronics, 1930-2000 (CB) **Mr 119**
Technological Development
America's Technology Slip (CB) **Je 116**
Awards Competition at International Technology Fair (NR) **F 62**
Technological Innovation
Technological Innovation in Education and Industry (CB) **F 128**
Technological Talents
Help Wanted: "Sales Engineers" (NB) **N 90**
Technologists
SME Certification Programs (EN) **N 95**
Technology
Black Americans in Technology (STV) **Ap 87**
China Looks to Hydro Power (ES) **My 19**
Living with Technology: Issues at Mid-Career (CB) **Ag 85**
McGraw-Hill Yearbook of Science and Technology—1980 (CB) **Mr 119**
Technology, Environment, and Human Values (CB) **Jl 92**
Technology for the Handicapped (NB) **Jl 79**
Technology's the Answer, But That's Not the Question **S 38**
Technology Assessment
Technology Assessment: A Background Review (80-WA/Mgt-3) (A) **Ja 102**
Technology Transfer
Technology Transfer, Innovation and International Competitiveness (CB) **S 90**
Telechiric Mining
Mining Without Men Going Underground (81-Pet-21) (A) **My 90**
Telecommunications
The Canadian Connection (NB) **F 65**
Telephone Equipment
Woman Engineer Designs Manhole Cover (BTR) **Jl 54**
Telescopes
Development and Integration of the Infrared Telescope for Spacelab (81-ENAs-16) (A) **S 86**
The "Expanding Universe" (NR) **O 74**
Space Telescope Primary Mirror (BTR) **Ag 48**
Sunshade/Radiative Cooler for IRAS Infrared Astronomical Satellite (81-ENAs-3) (A) **S 86**
Temperature Control Systems
The Cabin Air Conditioning and Temperature Control System for the Boeing 767 and 757 Airplanes (80-ENAs-5) (A) **Mr 110**
Temperature-Dependent Fouling
A Heat Exchanger Computational Procedure for Temperature-Dependent Fouling (81-HT-75) (A) **O 98**
Temperature Distribution
On the Simplifications of Mathematical Model for Nongrey Gas Radiation Heat Transfer (81-HT-64) (A) **O 97**
Transfer Thermography **O 42**
Temperature Gage
Fiber-Optic, Semiconductor Temperature Gage (BTR) **N 76**
Temperature Gradients
Heat Must Go Somewhere (C) **F 46**
Passive Thermal Control of the ASALM-PTV Ejectable Nozzle (80-ENAs-8) (A) **Mr 111**
Temperature Measurement
Turbine Pyrometry—An Equipment Manufacturer's View (81-GT-136) (A) **Jl 85**
Temperature Restrictions
Saving Energy via the "Houston Plan" (NB) **F 65**
Templates
Contour-Measuring Tool for Composite Layups (BTR) **My 50**
Tennant, D. B. EEI Clean Air Act Amendments Affecting Stationary Sources (81-JPGC-APC-3) (A) **D 100**
Tensile Properties
Tensile Properties of Triaxially Woven Fabrics Under Biaxial Loading (80-Tex-3) (A) **F 122**
Tension
Creep of 2618 Aluminum Under Side-Steps of Tension and Torsion and Stress Reversal Predicted by a Viscous-Viscoelastic Model (81-APM-8) (A) **S 84**
Tension Leg Platforms
The Dynamics of Tension Leg Platforms in Waves (81-Pet-27) (A) **My 90**
Terada, K. Fundamental Study on Semi-Actively Controlled Pneumatic Servo Suspensions for Rail Cars (81-RT-6) (A) **Ag 76**
Termuehlen, H. Conceptual Design of 100 Percent External Turbine Bypass Systems (80-JPGC/Pwr-19) (A) **F 117**
Terotechnology
Maintenance Planning, Control And Documentation, 2nd Ed. (CB) **My 92**
Tesar, D. The Generalized Coordinate Selection for the Dynamics of Complex Planar Mechanical Systems (80-DET-85) (A) **Mr 108**; 3 MSP Synthesis of the RCCC Linkage: A Generalized Dual Number Approach (80-DET-99) (A) **Mr 109**
Tessier, M. J. Sodium-Water Reaction Testing in Support of LMFBR Steam Generator Development (81-JPGC-NE-3) (A) **N 109**
Test Program
U.S. Large Leak Sodium-Water Reaction Test Program (80-WA/NE-3) (A) **Ja 96**
Textile Engineering
An Analytical Approach to the Effect of Laundering Processes on the Drape and Stiffness Properties of Cotton Woven Fabrics (80-Tex-1) (A) **F 122**
Development of Multi-Bar Weft-Insert Warp Knit Glass Fabrics for Industrial Applications (80-Tex-7) (A) **F 123**
Dyehouse Energy Consideration for the 1980's (80-Tex-8) (A) **F 123**
The Initial Modulus of Filament Webs (80-Tex-6) (A) **F 123**
A Model for Drying on Adiabatic Saturation Lines (80-Tex-2) (A) **F 122**
Sampling for Confidence Interval Estimation of the Fiber Shape Factor (80-Tex-5) (A) **F 122**
The Tearing of Plain Woven Fabrics Made from Ring, Open and Twistless and Twisted Bonded Yarns (80-Tex-4) (A) **F 122**
Tensile Properties of Triaxially Woven Fabrics Under

Biaxial Loading (80-Tex-3) (A) **F 122**

Textile Industries
ASME and Japanese Society to Co-Host '81 Textile Conference (NR) **S 68**

Textile Machinery
Vibration Measurement of a Moving Tangential Drive Belt (81-DET-36) (A) **O 104**

Textor, D. Heat Transfer in a Periodic Boundary Layer Near an Axisymmetric Stagnation Point on a Circular Cylinder (81-GT-92) (A) **Je 112**

Thackray, J. C. The Development of Sea-Cure Condenser Tubing (Crucible SC-1) (81-JPGC-Pwr-3) (A) **N 111**

Thackrey, J. D. Reflections on Mirror Fusion (C) **O 50**

Thawing
Brine Channel Enlargement in Sea Ice During Spring Thaw (80-WA/HT-18) (A) **Ap 104**

Theorists
The Theory and Practice of Management: Part Art, Part Science (80-WA/Mgt-1) (A) **Ja 102**

Theory and Application
Mechanism Case Studies V (80-DET-13) (A) **F 118**

Thermal Analysis
A Thermal Analysis on the Deep Quest Life Support System (80-ENAs-30) (A) **Mr 113**

Thermal Barrier
The Response of a Thermal Barrier System to Acoustic Excitation in a Gas Turbine Nuclear Reactor (81-GT-16) (A) **Je 105**
The Venting Characteristics of a Fibrous Thermal Barrier System During a Rapid Depressurization Accident (Rotor Failure) in an HTGR-GT (81-GT-14) (A) **Je 105**

Thermal Barrier Materials
Advanced Coating for Gas Turbine Materials (81-GT-85) (A) **Je 111**

Thermal Behavior
A Study on Thermal Behavior of Large Seal-Ring (81-Lub-27) (A) **D 97**
The Thermal Behavior of Oscillating Squeeze Films (81-Lub-26) (A) **D 97**

Thermal Boundary Layer
An Integral Analysis for Incompressible Turbulent Thermal Boundary Layer Flow: Nonuniform Wall Heating (80-WA/HT-57) (A) **My 84**

Thermal Conductivity
Effective Thermal Conductivity of Porous Solid-Gas Mixtures (80-WA/HT-63) (A) **My 84**
Measurements of Effective Thermal Conductivity and Evaporative Heat Loss in Granular Porous Media (81-HT-58) (A) **O 98**
Quick-Response Heat Pipe (IF) **Jl 61**

Thermal Control
Active Thermal Control for an Advanced Power Platform (81-ENAs-31) (A) **S 87**
Aspects of Thermal Control Analysis of Spacelab (80-ENAs-12) (A) **Mr 111**
Passive Thermal Control of the ASALM-PTV Ejectable Nozzle (80-ENAs-8) (A) **Mr 111**

Thermal Control Subsystems
Thermal Control Subsystem Definition for Science and Application Platform (81-ENAs-30) (A) **S 87**

Thermal Control Systems
Heat Pipe Avionic Thermal Control Systems (80-ENAs-4) (A) **Mr 111**
Materials Experiment Carrier Thermal Control Systems Study (81-ENAs-32) (A) **O 100**
Simulation Experiments of Phase-Change Thermal Systems (80-ENAs-25) (A) **Mr 112**

Thermal $DeNO_x$
Exxon Thermal $DeNO_x$ Process for Utility Boiler Applications (81-JPGC-Fu-9) (A) **D 94**

Thermal Design
Thermal Design of the Space Shuttle External Tank (81-ENAs-15) (A) **S 87**

Thermal Dispersion
An Ad-Hoc Method for Convection Dominated Flows (81-FE-15) (A) **S 82**

Thermal Effects
Further Studies of the Influence of Thermal Effects on the Predicted Acceleration of Gas Turbines (81-GT-21) (A) **Je 105**

Thermal Efficiency
The Methanol Car (ES) **N 71**
Preliminary Study on Reheat Combustor for Advanced Gas Turbine (81-GT-29) (A) **Je 106**

Thermal Energy
Analysis and Design of Hybrid Double-Absorption Cooling Systems for Low Grade Thermal Energy Applications (80-WA/HT-44) (A) **Ap 106**
"David and Goliath" (ES) **My 19**
Enhanced Heat Conduction in Phase-Change Thermal Energy Storage Devices (80-WA/HT-45) (A) **Ap 106**
Five-MW(th) Solar Receiver Passes Test (BTR) **Je 69**
Geothermal Energy: An Assessment **My 20**
Thermal Energy Storage and Regeneration (CB) **Ag 85**

Thermal Environment
Optimizing the Performance of the P-3C Environmental Control System (80-ENAs-6) (A) **Mr 111**

Thermal Fixation
An Analysis of the Thermal Fixation of Pilings (80-WA/HT-6) (A) **Ap 103**

Thermal-Hydraulics
Thermal-Hydraulic Differential Sensitivity Theory (80-WA/HT-56) (A) **My 84**

Thermal Interfaces
Thermal Accommodation Techniques for Payloads On-Board Spacelab (80-ENAs-20) (A) **Mr 112**

Thermal Manikin
A Ten-Zone Thermal Manikin for Evaluating Personnel Protective Garments in Cold Air and Water Immersion Environments (80-WA/OCE-13) (A) **Mr 118**

Thermal Mass
Low-Profile Shelter (BTR) **Ag 44**

Thermal Membrane Stresses
Circular Saw Vibration Control by Induction of Thermal Membrane Stresses (80-WA/Prod-8) (A) **My 82**

Thermal Nonequilibrium
Parametric Effects on Vapor Non-Equilibrium in Post-Dryout Heat Transfer (80-WA/HT-50) (A) **Ap 107**

Thermal Parameters
Thermal Performance Analysis of an MHD Simulation Test Facility (80-WA/HT-13) (A) **Ap 104**

Thermal Performance
Design Analysis of High Temperature Transparent Windshields for High Performance Aircraft (81-ENAs-5) (A) **S 85**
A Portable Oxygen Subsystem—Description and Preliminary Thermal Performance Prediction (80-ENAs-7) (A) **Mr 111**
Some Fundamental Relationships for Tubular Heat Exchanger Thermal Performance (81-HT-33) (A) **O 95**
Thermal and Economic Assessment of Ground-Coupled Storage for Residential Solar Heat Pump Systems (80-WA/Sol-10) (A) **Ap 93**

Thermal Plume
Reynolds Number and Ambient Turbulence Effects on the Nearfield Mean Characteristics of a Laboratory Mc Jet Thermal Plume (81-FE-7) (A) **S 81**

Thermal Pollution
Heat Must Go Somewhere (C) **F 46**

Thermal Power Systems
Conceptual Design of an Advanced Water/Steam Receiver for a Solar Thermal Central Power System (81-Sol-5) (A) **S 80**

Thermal Properties
Influence of Thermal Properties on Distortion of High-Energy Laser Mirrors (81-HT-31) (A) **O 95**
Thermal Properties of Rock Salt and Quartz Monzonite to 573 K and 50-MPa Confining Pressure (81-HT-51) (A) **O 95**

Thermal Protection
Assessment of Thermal Protection Afforded by Hot Water Diving Suits (80-WA/OCE-4) (A) **Mr 117**
A Ten-Zone Thermal Manikin for Evaluating Personnel Protective Garments in Cold Air and Water Immersion Environments (80-WA/OCE-13) (A) **Mr 118**

Thermal Radiation
A Mixed Gray-Gas Model to Calculate Water Vapor Standard Emissivities (81-HT-63) (A) **O 97**
Thermal Radiation Properties of Pure H_2O Ice from 0.70 to 1.35 Micrometers (81-HT-67) (A) **O 99**
Thermal Radiation Properties of ThO_2 in Contact with Sodium and Steel (81-HT-66) (A) **O 98**

Thermal Response
Thermal Response of a Dielectric Stack Exposed to Pulsed Coherent Radiation (81-ENAs-14) (A) **S 87**

Thermal Storage
Thermal Storage Requirements for Parabolic Dish Solar Power Plants (80-WA/Sol-21) (A) **Ap 94**

Thermal Stress
Data Acquisition System for Thermal Stress Studies (80-WA/OCE-14) (A) **Ap 98**
Effect of Temperature Dependent Mechanical Properties on Thermal Stress in Cooled Turbine Blades (81-GT-105) (A) **Je 112**

Thermal Systems
Objectives of and Approach to Spacelab Thermal System Test Performed with the Engineering Model (81-ENAs-17) (A) **S 87**
Pre- and Post-Test Analysis for Spacelab Thermal System Test, Derivation of Tolerance and Comparison with Test Results (81-ENAs-18) (A) **S 87**
Spacelab Thermal System Analysis Approach and First Results of System Verification Testing (80-ENAs-21) (A) **Mr 112**

Thermal Taper
Experimental Evaluation of a Mixed Friction Hydrostatic Mechanical Face Seal Model Considering Radial Taper, Thermal Taper, and Wear (81-Lub-38) (A) **D 98**

Thermal Transients
Monitoring of Nuclear Power Plant Reactor Vessel Thermal Transients and Fatigue Usage Factors (81-PVP-12) (A) **Ag 79**

Thermal Vacuum Testing
Thermal Vacuum Testing of Flexible Radiator Systems (81-ENAs-46) (A) **S 88**

Thermal Visualization
Evaluation of a Method for Heat Transfer Measurements and Thermal Visualization Using a Composite of a Heater Element and Liquid Crystals (81-GT-93) (A) **Je 112**

Thermally Conductive Wall
Studies of Full-Coverage Film Cooling Part 1: Cooling Effectiveness of Thermally Conductive Wall (81-GT-37) (A) **Je 107**; Part 2: Measurement of Local Heat Transfer Coefficient (81-GT-38) (A) **Je 106**

Thermodynamicists
Engineer, Entrepreneur, Economist—All in One! **D 36**

Thermodynamics
Energy Conservation Through Process Modification and Control (81-PID-2) (A) **My 86**

Thermoelastic Contact
Stability Considerations in Thermoelastic Contact (80-WA/APM-25) (A) **Ja 102**

Thermoelastic Rod
A Thermomechanical Example of Auto-Oscillation (80-WA/APM-21) (A) **Ja 101**

Thermography
Transfer Thermography **O 42**

Thermohydraulic Data
Improvement in Performance and Availability of Currently Operating MSR's (80-JPGC/Pwr-12) (A) **F 117**

Thermohydrodynamic Behavior
Empirical Design Procedure for the Thermohydrodynamic Behavior of Journal Bearings (81-Lub-19) (A) **D 97**

Thermomechanical System
A Thermomechanical Example of Auto-Oscillation (80-WA/APM-21) (A) **Ja 101**

Thermoplastics
Plastic Welder (BTR) **Ja 55**

Thermosyphon Systems
Equipment Leasing Terms for Solar Heaters (IF) **S 58**

Thermosyphons
An Experimental Study of a Closed Two-Phase Thermosyphon for Ice Production (81-HT-16) (A) **O 94**

Thiele, E. W., Jr. Tube to Tubesheet Joint Strengths (81-JPGC-Pwr-7) (A) **N 110**

Thin Circular Cylinders
Formulas of Natural Frequency Prediction for Thin Circular Cylinders (81-DET-77) (A) **O 105**

Thin Shells
Applications of the Semi-Loof Thin Shell Element to the Analysis of Aircraft Engine Structures (81-GT-104) (A) **Je 112**

Thin-Walled Pipe
Classification of Clamp-Induced Stresses in Thin-Walled Pipe (81-PVP-17) (A) **Ag 80**
Thrid World
Technical Aid for Third World (IF) **N 82**
Third World Nations
Energy Alternatives for Third World Nations (EN) **My 70**
Thomas, D. L. A Linear Impact Tool for Diver Use (81-DE-11) (A) **Ag 78**
Thomas, D. W. Bearing Fault Detection Using Adaptive Noise Cancelling (81-DET-7) (A) **D 88**; Effect of Inter-Modulation and Quasi-Periodic Instability in the Diagnosis of Rolling Element Incipient Defect (81-DET-11) (A) **N 104**
Thomas, E. F. Elections to Fellow Grade **Ap 90**
Thomas, L. C. An Integral Analysis for Incompressible Turbulent Thermal Boundary Layer Flow: Nonuniform Wall Heating (80-WA/HT-57) (A) **My 84**
Thomas, M. E. Effects of Inlet Conditions and Water Injection on Emissions from a Duel-Fuel Industrial Gas Turbine (81-GT-47) (A) **Je 108**
Thomas, P. J. Constructive Geometry in Three Dimensions for Computer-Aided Design (81-DET-106) (A) **N 107**
Thomas, R. L. ANSI B133.7 Survey of Gas Turbine Synthetic Liquid Fuels (81-JPGC-GT-8) (A) **D 95**
Thomas, T. J. Comparative Study of Direct Numerical Integration Schemes in Linear and Nonlinear Analysis of a Dynamic System (80-WA/DSC-26) (A) **Mr 116**; Thermal Fatigue Analysis of a Railcar Wheel Under Drag Braking (80-WA/DE-4) (A) **Ap 98**
Thomas, T. R. Roughness Characteristics of Plane Surface Based on Velocity Similarity Laws (81-FE-34) (A) **S 83**
Throme, J. R. Latent and Sensible Heat Transfer Rates in the Boiling of Binary Mixtures (81-HT-28) (A) **O 95**
Thompkins, W. T., Jr. Inverse or Design Calculations for Non-Potential Flow in Turbomachinery Blade Passages (81-GT-78) (A) **Je 110**; A Quasi-Three-Dimensional Blade Surface Boundary Layer Analysis for Rotating Blade Rows (81-GT-126) (A) **Je 114**
Thompson, B. S. The Finite Element Analysis of Flexible Components of Mechanical Systems Using a Mixed Variational Principle (80-DET-64) (A) **Mr 107**; The Finite Element Analysis of Mechanism Components Made From Fiber-Reinforced Composite Materials (80-DET-63) (A) **Mr 107**; The Finite Element Design of Linkages—A Comparison of Timoshenko and Euler Bernoulli Elements (81-DET-109) (A) **N 107**; A Variational Formulation for the Finite Element Analysis of High-Speed Machinery (80-WA/DSC-38) (A) **Mr 117**
Thompson, C. D. Preprototype Vapor Compression Distillation Subsystem Development (81-ENAs-25) (A) **S 87**
Thompson, R. E. Fiber Optic Cables in the Ocean Environment (80-WA/OCE-6) (A) **Mr 118**
Thompson, S. Nonequilibrium Flashing Model for Rapid Pressure Transients (81-HT-35) (A) **O 95**
Thorn, R. W. Constructive Geometry in Three Dimensions for Computer-Aided Design (81-DET-106) (A) **N 107**
Thorpe, J. F. Simple Engineering Homework Negates Alleged Defect in Ladder Accident Case (80-WA/DE-12) (A) **Ap 101**
Threads
The Split Nut: An Easy to Fit Nut with a Higher Inherent Strength (80-WA/DE-6) (A) **Ap 98**
Three-Cylinder Diesel Engine
Method to Calculate the Balancing System of a Three-Cylinder Diesel Engine (81-DGP-8) (A) **My 88**
Three Dimensional Construction
Constructive Geometry in Three Dimensions for Computer-Aided Design (81-DET-106) (A) **N 107**
Three-Dimensional Flow
Application of Basic Aerothermodynamic Equations Governing Three-Dimensional Flow in Turbomachinery and Identification of Type of Equation (81-GT-142) (A) **Jl 84**
Three-Dimensional Kinematics
On the Principle of Transference in Three-Dimensional Kinematics (80-DET-88) (A) **Mr 109**
Three-Link Linkage
Analysis and Synthesis of a Three-Link Linkage with an Intermediate Higher Kinematic Pair (80-DET-94) (A) **Mr 109**
Three Mile Island
More Nuclear Views (C) **Mr 66**
No Man is an Island (80-WA/Mgt-5) (A) **Je 103**
Zwiep's Important Message (C) **Ap 54**
Three-Stage Compressor
Effect of Casing Treatment on Performance of a Three-Stage L.P. Compressor (81-GT-159) (A) **Jl 86**
Thring, M. W. *(author)* The Engineer's Conscience (CB) **N 116**; Mining Without Men Going Underground (81-Pet-21) (A) **My 90**
Thrombosis
The Battle Against Thrombosis (BTR) **Jl 47**
Throttle Flow
Determining Turbine Throttle Flow from Measured First Stage Shell Pressure—A Critical Assessment (81-JPGC-Pwr-17) (A) **N 112**
Throttles
Precision Speed Control Systems with Throttle Disturbance Forces (81-DGP-3) (A) **My 87**
Throw Geometry
Spatial Finite Line Element Method for Determining Critical Speeds of Multi-Throw Crankshafts Considering Actual Throw Geometry (81-DET-141) (A) **D 91**
Thrust Bearings
Analysis of Externally Pressurized, Double-Pad, Gas Porous Thrust Bearing (81-Lub-25) (A) **D 98**
A Comparison of Tilting Pad Thrust Bearing Lubricant Supply Methods (81-Lub-8) (A) **D 96**
Thrust Loads
Endurance Tests with Large-Bore Tapered-Roller Bearings to 2.2 Million DN (81-Lub-56) (A) **D 100**
Thurman, A Fatigue Crack Growth in Pressurized Water Reactor Feedwater Lines (81-PVP-2) (A) **Ag 79**
Thurman, A. L. 3-D Finite Element Analysis for the Investigation of Feedwater Line Cracking in PWR Steam Generators (81-PVP-3) (A) **Ag 78**
Tian-yu, X. Some Factors Affecting Altitude Relighting Performance of Turbojet Engine Combustor (81-GT-49) (A) **Je 108**
Tichauer, E. R. Elections to Fellow Grade **O 92**
Tichy, J. A. The Thermal Behavior of Oscillating Squeeze Films (81-Lub-26) (A) **D 97**
Tien, C. L. Radiative Heat Transfer in Fibrous Insulations—Part 1: Analytical Study (81-HT-42) (A) **O 96**; Part II: Experimental Study (81-HT-43) (A) **O 97**
Tiller, A. R. Pattern Factor Improvement in the F-100 Primary Combustion System (81-GT-25) (A) **Je 105**
Tilliette, Z. P. Power Generation From a 770°C Heat Source by Means of a Main Steam Cycle, a Topping Closed Gas Cycle and an Ammonia Bottoming Cycle (81-GT-18) (A) **Je 105**
Tillman, D. A. *(editor)* Fuels from Waste (CB) **N 116**
Tilted Flat Plate
Deposition of Suspensions in Turbulent Flow Over a Tilted Flat Plate (81-FE-28) (A) **S 82**
Tilting Pad Bearings
Four Pad Tilting Pad Bearing Design and Application for Multistage Axial Compressors (81-Lub-12) (A) **D 96**
Tilting Pad Thrust Bearings
A Comparison of Tilting Pad Thrust Bearing Lubricant Supply Methods (81-Lub-8) (A) **D 96**
Time Delays
Simulation of the Transport Time Delay in Fluid Loops by Means of a Corrective Heat Flux (80-ENAs-22) (A) **Mr 112**
Time Dependence
A Test for Time Dependence of Multivariate Linear Systems (80-WA/DSC-30) (A) **Mr 116**
Time-Dependent Behavior
Self-Consistent Determination of Time-Dependent Behavior of Metals (81-APM-11) (A) **S 84**
Time Integration
On the Dynamic Simulation of Large Nonlinear Mechanical Systems: Part 1—An Overview of the Simulation Technique. Substructuring and Frequency Domain Consideration (80-DET-66) (A) **Mr 107**; Part II—The Time Integration Technique and Time Response Loop (80-DET-67) (A) **Mr 107**
Time Schedule
Optimum Path Planning for Mechanical Manipulators (80-WA/DSC-18) (A) **Mr 115**
Time Study
Motion and Time Study: Design and Measurement of Work, 7th Ed. (CB) **My 92**
Tinsley, R. W. In the Matter of Reading Matter (C) **D 57**
Tip Clearance
A Method for the Calculation of the Wall Layers Inside the Passage of a Compressor Cascade With and Without Tip Clearance (81-GT-168) (A) **Jl 87**
Tip Leakage Flows
Rotor-Tip Leakage: Part 1—Basic Methodology (81-GT-71) (A) **Je 110**; Part II—Design Optimization Through Viscous Analysis and Experiment (81-GT-72) (A) **Je 110**
Tipei, N. Flow and Pressure Heat at the Inlet of Narrow Passages, Without Upstream Free Surface (81-Lub-41) (A) **D 99**; Theory of Lubrication With Ferrofluids: Application to Short Bearings (81-Lub-39) (A) **D 99**
Tire Treads
Ultrasonic Device Tests and Measures Tire Treads (IF) **Ag 51**
Tirosh, J. Fracture Criteria of Fibrous Laminated Composites Under In-Plane Multidirectional Loading (80-WA/APM-9) (A) **Je 100**
Tischler, V. A. Dynamic Analysis of High Speed Rocket Sleds (81-DET-42) (A) **O 104**
Tishkoff, J. M. Diagnostic Measurements of Fuel Spray Dispersion (80-WA/HT-35) (A) **Ap 105**
Titanium
Nonlinear Damage Cumulation in Solution-Treated and Aged Titanium 6 A1-4V (81-GT-106) (A) **Je 112**
Titanium Alloy
The Rate (Time)-Dependent Behavior of Ti-7Al-2Cb-1Ta Titanium Alloy at Room Temperature Under Quasi-Static Monotonic and Cyclic Loading (81-APM-7) (A) **S 84**
Tlusty, J. Special Aspects of Chatter in Milling (81-DET-18) (A) **D 89**
Toby, B. J. Wear Prediction for Locomotive Wheels (81-RT-8) (A) **Ag 76**
Token, K. H. Heat Pipe Avionic Thermal Control Systems (80-ENAs-4) (A) **Mr 111**
Tolerance Capability
A CAD/CAM Graphics System with Relative Datums and Tolerances (81-DET-108) (A) **N 107**
Tolerances
Optimal Synthesis of Tolerance and Clearance in Function Generating Mechanisms—A Parametric Programming Problem (81-DET-5) (A) **O 102**
Tollinger, D. Evaluation of Biological Models Using Spacelab (80-ENAs-38) (A) **Mr 113**
Tolokan, R. P. Ceramic to Metal Attachment Using Low Modulus Brunsbond® Pad (81-GT-160) (A) **Jl 86**
Tolot, B. L. Use of Freeze Conditioning Agents and a Thawing Product on Coal (80-JPGC/Fu-5) (A) **Je 98**
Tomizuka, M. An Adaptive Control Scheme for Mechanical Manipulators—Compensation of Nonlinearity and Decoupling Control (80-WA/DSC-6) (A) **Mr 114**; Design of Digital Feedforward/Preview Controllers for Processes With Predetermined Feedback Controllers (80-WA/DSC-2) (A) **Mr 114**
Tomlinson, L. O. Economics of Heavy Fuels in Gas Turbines and Combined Cycles (81-GT-45) (A) **Je 107**
Tonal Noise
Suppressing Jet Buzz-Saw Noise (BTR) **Je 83**
Tong, K. C. S. An Ad-Hoc Method for Convection Dominated Flows (81-FE-15) (A) **S 82**
Tong, T. W. Radiative Heat Transfer in Fibrous Insulations—Part 1: Analytical Study (81-HT-42) (A) **O 96**; Part II: Experimental Study (81-HT-43) (A) **O 97**
Tool Change
Machining Parameter Optimization for Multistation Synchronous Machines (80-DET-60) (A) **Mr 107**
Tool-Chip Contact Length
Tool-Chip Contact Length in Orthogonal Machining (80-WA/Prod-23) (A) **My 83**

Tool Structures
System Approach to the Thermal Behavior and Deformation of Machine Tool Structures in Response to the Effect of Fixed Joints (80-WA/Prod-14) (A) **My 83**
Tool Systems
Powered Hand Tool Efficiency (NB) **Ap 80**
Tooling Design
Tooling Design for ECM—A Finite Element Approach (80-WA/Prod-9) (A) **My 82**
Tools
The Planning and Execution of Engineering Work in a Project Environment (80-WA/Mgt-2) (A) **Ja 102**
Tooth Strength
Optimal Tooth Numbers for Compact Standard Spur Gear Sets (81-DET-115) (A) **D 92**
Topographical Distribution
Topographical Representation of Interface Pressure Distribution in a Multiple Bolt-Flange Assembly-Measurement by Means of Ultrasonic Waves (81-DE-7 (A) **Ag 78**
Torda, T. P. Editor, Retiring **N 72**
Toren, M. Rotating Compressible Flow Over the Edge of a Finite Disk (81-APM-19) (A) **S 84**
Toroidal Drive
The Toroidal Drive **F 32**
Toroids
Plastic Welder (BTR) **Ja 55**
Torque
Influence of Restoring Torque Between Truck and Car-Body on the Transversal Stability of a Railway Car at Seven, Seventeen and Nine Degrees of Freedom (81-DET-41) (A) **O 104**
Torque and Stress Balanced Design of Helically Armored Cables (80-WA/OCE-1) (A) **Mr 118**
Torque Requirements
A Generalized Mathematical Model to Estimate Gas Turbine Starting Characteristics (81-GT-202) (A) **JI 90**
Torque Ripple
Torque Ripple in a Darrieus, Vertical Axis Wind Turbine (80-WA/Sol-13) (A) **Ap 93**
Torsion
Creep of 2618 Aluminum Under Side-Steps of Tension and Torsion and Stress Reversal Predicted by a Viscous-Viscoelastic Model (81-APM-8) (A) **S 84**
On a Finite Element Formulation of Dynamical Torsion of Beams Including Warping Inertia and Shear Deformation Due to Nonuniform Warping (81-DET-140) (A) **D 91**
On Torsion and Transverse Flexure of Orthotropic Elastic Plates (80-WA/APM-16) (A) **Ja 100**
Torsion Springs
A Generalized Torsion Spring Design Method—A Further Refinement (80-DET-5) (A) **F 119**
Total Absorptance
A Simplified Approach to the Evaluation of the Geometric-Mean Transmittance and Absorptance for Gas Enclosures (81-HT-62) (A) **O 99**
Total-Pressure Unsteadiness
Measurement and Analysis of Total-Pressure Unsteadiness Data from a Axial-Flow Compressor Stage (81-Gr/GT-2) (A) **O 102**
Tournay, H. M. The Development of an Optimum Wheel Profile for Self-Steering Trucks Under Heavy Axle Load Conditions (80-WA/RT-5) (A) **F 125**
Tow Techniques
Tow Techniques for Marine Pipeline Installation (81-Pet-30) (A) **My 90**
Towers
Hydro-Power Plant and Shot Tower Named Landmarks (NB) **Ag 64**
Toxicology
Toxicology Program (EN) **Je 91**
Toyoda, M. A Study on Creep Behavior Evaluation for Welded Joint in High Temperature Structure Design (81-PVP-36) (A) **Ag 82**
Trace Contaminants
Adsorption Interference in Mixtures of Trace Contaminants Flowing Through Activated Carbon Adsorber Beds (80-ENAs-17) (A) **Mr 112**
Tracer Gas
Use of a Tracer Gas Technique to Study Mixing in a Low Speed Turbine (81-GT-86) (A) **Je 111**
Tracey, T. R. Development of a Solar Thermal Central Heat Receiver Using Molten Salt (81-Sol-2) (A) **S 80**
Track Irregularity
Parametric Excitation of Rail Vehicle Wheelsets Due to Track Irregularity (80-WA/DSC-20) (A) **Mr 116**
Tracking
Particles with a Tack Record (BTR) **JI 56**
Traction
Regimes of Traction in Concentrated Contact Lubrication (81-Lub-1F) (A) **D 96**
Traction Coefficients
A Numerical Solution of the Thermal Elastohydrodynamic Lubrication in an Elliptical Contact (81-Lub-29) (A) **D 97**
Traction Motor
The SD50 Locomotive (81-RT-2) (A) **Ag 77**
Tractive Effort
Evaluation Techniques for Locomotive Performance (Fuel Economy, Adhesion, Tractive Effort) (81-RT-1) (A) **Ag 76**
Tractors
Britain Claimits Share of Landmark (C) **S 48**
Holt Caterpillar Tractor Designated International Landmark (NR) **Je 82**
Remembering the Holt Tractor (C) **Ag 43**
Trafford, A. O. Britain Claims its Share of Landmark (C) **S 48**
Train Brakes
Train Brake and Track Capacity Requirements for the 80s (81-RT-11) (A) **Ag 76**
Train Speed Control
Train Brake and Track Capacity Requirements for the 80s (81-RT-11) (A) **Ag 76**
Trainer Subsonic Aircraft
Air-Freon Integrated Environmental Conditioning System for Trainer Subsonic Aircraft (81-ENAs-33) (A) **O 100**
Training
The Need to Train Regulators (C) **Je 62**
Trajectories
Instantaneous Properties of Trajectories Generated by Planar, Spherical, and Spatial Rigid Body Motions (80-DET-19) (A) **F 119**
Tran, H. T. Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: P and SV Motion (81-APM-18) (A) **S 84**
Transducers
Acoustic Emission Testing (BTR) **Ja 56**
Compliant Transducer Measures Artery Profile (BTR) **Ap 61**
Data Acquisition System for Thermal Stress Studies (80-WA/OCE-14) (A) **Ap 98**
Grading Beef by Ultrasound (BTR) **JI 54**
Transfer Functions
Scale Effects in the Dynamic Transfer Functions for Cavitating Inducers (80-WA/HT-51) (A) **Ap 107**
Transference
On the Principle of Transference In Three-Dimensional Kinematics (80-DET-86) (A) **Mr 109**
Transformation
Application of the Integral Method to Two-Dimensional Transient Heat Conduction Problems (80-WA/HT-55) (A) **My 84**
Transient Acoustic Wave
Nonlinear Response of an Elastic Cylindrical Shell to a Transient Acoustic Wave (81-APM-10) (A) **S 84**
Transient Analysis
Operational, Control and Protective System Transient Analysis of the Closed-Cycle GT-HTGR Power Plant (80-WA/GT-1) (A) **Ap 102**
Transient Analysis of Rotor-Bearing Systems Using Component Mode Synthesis (81-GT-110) (A) **Je 112**
Transient Film Condensation
Transient Film Condensation on a Finite Horizontal Plate (81-HT-27) (A) **O 95**
Transient Heat Conduction
Application of the Integral Method to Two-Dimensional Transient Heat Conduction Problems (80-WA/HT-55 (A) **My 84**
Transient Heat Transfer
Further Studies of the Influence of Thermal Effects on the Predicted Acceleration of Gas Turbines (81-GT-21) (A) **Je 105**
Transient Pressure
Safety Relief Valve Discharge Downcomer Transients for a BWR (81-FE-27) (A) **S 82**
Transient Response
Dynamics of Rotor Bearing Systems Supported by Floating Ring Bearings (81-Lub-37) (A) **D 98**
Propagation of Elastic Pulses and Acoustic Emission in a Plate—Part 1: Theory (81-APM-4) (A) **S 84**; Part 2: Epicentral Responses (81-APM-5) (A) **S 83**; Part 3: General Responses (81-APM-6) (A) **S 83**
Transient Thermal Behavior
Pre- and Post-Test Analysis for Spacelab Thermal System Test, Derivation of Tolerance and Comparison with Test Results (81-ENAs-18) (A) **S 87**
Transient Torque
Transient Torque Produced in Main Shaft of Electric Hoist During Motor Start-Up and Emergency Brake Operations (81-DET-60) (A) **N 105**
Transient Vibration
Detection of a Transverse Crack in a Turbine Shaft—The Oak Creek Experience (81-JPGC-Pwr-19) (A) **N 112**
Transient Waves
Propagation of Elastic Pulses and Acoustic Emission in a Plate—Part 1: Theory (81-APM-4) (A) **S 84**; Part 2: Epicentral Responses (81-APM-5) (A) **S 83**; Part 3: General Responses (81-APM-6) (A) **S 83**
Transients
Method of Analysis of CRBRP Transients for the Steam Generation (81-JPGC-NE-5) (A) **N 109**
Transition Team
Reagan's Transition Advisers to Speak at ANSI Conference (NR) **Mr 79**
Transmissibility
Fail-Safe Vibration Control Using Active Force Generators (81-DET-85) (A) **N 106**
Transmission Dynamics
Role of Induction Driving Motor in Transmission Dynamics (80-DET-96) (A) **Mr 110**
Transmission Lines
Power Transmission Milestone (ES) **Mr 36**
Transmission Line Research (ES) **Je 24**
Transmissions
Getting 95 Miles per Gallon With New Transmission (EN) **Ag 66**
Transonic Compressor Rotors
An Aerothermodynamic Analysis of Transonic Compressor Rotors Containing Three-Dimensional Shocks (81-GT-120) (A) **Je 114**
Transonic Compressors
Effect of Blade Stagger Angle on Performance of a Transonic Compressor with Low Hub-Tip Ratio (81-GT-177) (A) **JI 88**
Transonic Fans
Experimental Investigation of a Low Hub-To-Tip Ratio Single Stage Transonic Fan (81-GT-209) (A) **JI 90**
Transonic Flow
Application of a Fast Pseudo-Unsteady Method to Steady Transonic Flows in Turbine Cascades (81-GT-124) (A) **Je 113**
A Computation and Comparison with Measurements of Transonic Flow in an Axial Compressor Stage with Shock and Boundary Layer Interaction (81-Gr/GT-5) (A) **O 101**
Finite Element Methods for Transonic Blade-to-Blade Calculations in Turbomachines (81-GT-5) (A) **Je 104**
Semi-Inverse Method of Computation in Inviscid Transonic Flows—Application to the Design of Turbomachine Blades Profiles (81-GT-206) (A) **JI 90**
Transonic Flow Computations in Cascades Using Finite Element Method (81-GT-4) (A) **Je 104**
Transonic Similarity Law
Similarity Law of Transonic Flow Fields Around Cascades (81-GT-36) (A) **Je 107**
Transpalite S Custom-Made Arcrylic Castings (IF) **N 83**
Transparent Windshields
Design Analysis of High Temperature Transparent Windshields for High Performance Aircraft (81-ENAs-5) (A) **S 85**
Transport Aircraft
Fuel for Future Transport Aircraft (81-HT-80) (A) **O 99**
Towards Minimum Power for Environmental Control in Transport Aircraft (81-ENAs-4) (A) **S 86**
Transportation
Bulk Handling—Advances in Mining, Transportation and Processing (80-WA/MH-9) (A) **Ap 96**

A History of the Columbus Section of ASME: 1920-1980 (CB) **Ag 84**

Transportation Fuels
The Refinery of the Future (ES) **S 25**

Transportation Systems
Transportation Bottlenecks (ES) **F 22**

Transversal Stability
Influence of Restoring Torque Between Truck and Car-Body on the Transversal Stability of a Railway Car at Seven, Seventeen and Nine Degrees of Freedom (81-DET-41) (A) **O 104**

Transverse Cracks
Detection of a Transverse Crack in a Turbine Shaft—The Oak Creek Experience (81-JPGC-Pwr-19) (A) **N 112**

Transverse Flexure
On Torsion and Transverse Flexure of Orthotropic Elastic Plates (80-WA/APM-16) (A) **Ja 100**

Transverse Oscillation
Dynamics of a Deploying Orbiting Beam-Type Appendage Undergoing Librations (81-DET-63) (A) **N 106**

Transverse Vibrations
Transverse Vibrations of a General Cracked-Rotor Bearing System (81-DET-45) (A) **D 89**

Treat, C. H. Rockbeds for Comfort Cooling: An Assessment in Several U.S. Cities (80-WA/Sol-8) (A) **Ap 93**

Treiber, K. L Elections to Fellow Grade **F 114**

Tremors
American Ceramic Predicts Japanese Earthquake (NB) **Ap 80**

Trent, C. E. Elections to Fellow Grade **JI 82**

Trezek, G. J. Heat and Mass Transfer from a Moist Porous Media of Large Particle Size (81-HT-53) (A) **O 97**

Triangular Tube Array
The Effect of Approach Flow Direction on the Flow Induced Vibrations of a Triangular Tube Array (81-DET-25) (A) **N 105**

Triaxial Fabrics
Tensile Properties of Triaxially Woven Fabrics Under Biaxial Loading (80-Tex-3) (A) **F 122**

Tricamo, S. J. A New Concept for Force Balancing Machines for Planar Linkages—Part I: Theory (80-DET-73) (A) **Mr 108**; Part II: Application to Four-Bar Linkage and Experiment (80-DET-74) (A) **Mr 108**

Trigeneration
Trigeneration (ES) **Mr 36**

Trigonometric Tables
Machinery's Handbook, Revised 21st Ed. (CB) **N 115**

Trippett, R. J. A System to Measure the Response of a High-Speed Rotor to a Sudden Imbalance (81-GT-117) (A) **Je 113**

Troeder, C. The Toroidal Drive **F 32**

Trompette, P. Optimal Shape Design of Turbine Blades (81-DET-128) (A) **N 108**

Tropospheric Ozone
Response of the Global Climate to Changes in Atmospheric Chemical Composition Due to Fossil Fuel Burning (80-WA/HT-3) (A) **Ap 103**

Troth, D. L. Design and Preliminary Results of a Fuel Flexible Industrial Gas Turbine Combustor (81-GT-108) (A) **Je 113**

Truck Bolster
Fatigue Analysis of Railroad Freight Car Truck Bolster (80-WA/RT-6) (A) **F 126**

Truck Designs
Dynamic Response of Freight Vehicle Systems—A Performance Characterization (81-RT-4) (A) **Ag 76**

Truck Propulsion
ITI GT601-A New Approach to Vehicular Gas Turbine Power Unit Design (81-GT-152) (A) **JI 86**

Truck Yaw Hunting
Effects of Centerplate Friction on Truck Yaw Hunting and Carbody Lateral Stability (81-RT-9) (A) **Ag 76**

Trucks
Emissions from Gasoline and Diesel Delivery Trucks by Chassis Transient Cycle (81-DGP-6) (A) **My 87**

Truman, C. R. Streamwise Flow and Heat Transfer Distribution for Jet Array Impingement with Crossflow (81-GT-77) (A) **Je 110**

Tsai, L.-W. Kinematic Synthesis of an Adjustable Six Bar Angular-Motion Compensator (80-DET-10) (A) **F 118**

Tsai, N. T. Dynamic Response of Freight Vehicle Systems—A Performance Characterization (81-RT-4) (A) **Ag 76**

Tsai, Y. C. Accessible Region and Synthesis of Robot Arms (80-DET-101) (A) **Mr 109**

Tsou, F. K. Experimental Determination of Transition Reynolds Number for Unsteady Film Cooling (81-GT-94) (A) **Je 111**

Tsuchiya, K. Passage of a Rotor Through a Critical Speed (81-DET-58) (A) **N 105**

Tsui, M. Parametric Resonance Oscillations of Flexible Slender Cylinders in Harmonically Perturbed Axial Flow—Part 1: Theory (80-WA/APM-30) (A) **Ja 101**; Part 2: Experiments (80-WA/APM-31) (A) **Ja 102**

Tsujikawa, G. S. Closed Loop Environmental Control Systems for Fighter Aircraft (81-ENAs-2) (A) **S 86**

Tsukizoe, T. Lubrication Mechanism of Solid Lubricants in Oils (81-Lub-50) (A) **D 99**

Tsutsumi, M. Topographical Representation of Interface Pressure Distribution in a Multiple Bolt-Flange Assembly-Measurement by Means of Ultrasonic Waves (81-DE-7) (A) **Ag 78**

Tube Bundles
Redesign and Replacement of Connecticut Yankee Moisture Separator/Reheater (MSR) Tube Bundles (81-JPGC-Pwr-2) (A) **N 110**

Tube Drawing
Drawing of Tubes (80-WA/APM-17) (A) **Ja 100**

Tube Sheets
Condenser Provisions for On-Line Detection of Tube Sheet Inleakage (80-JPGC/Pwr-23) (A) **F 118**

Tube Stresses
Tube Stresses in the Radiation Part of Solar Receivers and of Conventionally Fired Heaters (81-GT-200) (A) **JI 89**

Tube Vibration
Flow-Induced Tube Vibration Tests of Typical Industrial Heat Exchanger Configurations (81-DET-37) (A) **O 104**

Tubes
Axial Restraint of Tubes in a U-Tube Type Steam Generator (81-DET-38) (A) **O 104**
Condenser Tube-to-Tube Sheet Joint Inleakage: An Overview (81-JPGC-Pwr-6) (A) **N 110**
Continuous Condenser Tube Cleaning—An Update (81-JPGC-Pwr-13) (A) **N 111**
Double-Wall Tube Steam Generator for Breeder Nuclear Plants (81-JPGC-NE-2) (A) **N 109**
An Experimental and Analytical Investigation of Boiling Heat Transfer in Porous Bodies (81-HT-44) (A) **O 97**
Flow Induced Vibrations of Heat Exchanger U-Tubes, A Simulation to Study the Effects of Asymmetric Stiffness (81-DET-20) (A) **D 89**
Oil Drilling Tubes (IF) **O 64**

Tubesheet Joints
Hydraulically Expanded Tube to Tubesheet Joints (81-PVP-35) (A) **Ag 82**

Tubesheets
Tube to Tubesheet Joints Strengths (81-JPGC-Pwr-7) (A) **N 110**

Tubing
Heat-Shrinkable Sleeve Aids in Installing Universal Joints (BTR) **Ja 57**

Tubular Heat Exchanger
Some Fundamental Relationships for Tubular Heat Exchanger Thermal Performance (81-HT-33) (A) **O 95**

Tuition
Graduate-School Incentives Costly (C) **S 49**

Tung, P. C. Cold Springing of Piping Systems (81-PVP-26) (A) **Ag 81**

Tunnels
Moles at Work (ES) **O 27**

Tupper, R. B. Development of a Self-Actuated Shutdown System (81-JPGC-NE-8) (A) **N 109**; Storm Over S-T View (C) **Ja 49**

Turage, M. A Simplified Computer-Assisted Energy Calculation Procedure for the Evaluation of Building Architectural Concepts (80-WA/DSC-42) (A) **Mr 117**

Turanskyj, L. Design of Turbo Machine Set for Fluid Catalytic Cracking Plant and its Shop-Testing Under Full-Load Conditions (81-GT-101) (A) **Je 112**

Turbine Airfoils
Boundary Layer Development on Turbine Airfoil Suction Surfaces (81-GT-204) (A) **JI 90**

Turbine Blades
Combined Friction and Material Damping of Resonant Steam Turbine Blade Response (81-DET-136) (A) **D 92**
Determination of Damping Values for Turbine Blades (81-DET-131) (A) **N 108**
Fabrication of Injection Molded Sintered Alpha SiC Turbine Components (81-GT-161) (A) **JI 86**
Forces on Turbine Blades Studied (EN) **Mr 83**
Investigation of Vibration of Shrouded Turbine Blades (81-DET-129) (A) **N 108**
Optimal Shape Design of Turbine Blades (81-DET-128) (A) **N 108**
Sensitivity of Turbine Blade Temperatures to Tolerances of Design Variables (81-GT-90) (A) **Je 111**
Some Modifications to, and Operational Experiences with, the Two-Dimensional, Finite-Difference, Boundary-Layer Code, STAN5 (81-GT-89) (A) **Je 111**
Turbine Blades for Synfuels (ES) **O 27**

Turbine Blading
The Reheat Gas Turbine with Steam-Blade Cooling—A Means of Increasing Reheat Pressure, Output and Combined Cycle Efficiency (81-GT-30) (A) **Je 106**

Turbine Bypass Systems
Conceptual Design of 100 Percent External Turbine Bypass Systems (80-JPGC/Pwr-19) (A) **F 117**

Turbine Cascades
Application of a Fast Pseudo-Unsteady Method to Steady Transonic Flows in Turbine Cascades (81-GT-124) (A) **Je 113**

Turbine Cycles
Optimization of Gas Turbine Cycles with Variable Number of Combustion, Compressor, and Inter-Cooler Stages (81-JPGC-GT-6) (A) **D 95**

Turbine Deblading
HTGR-GT Primary Coolant Transient Resulting from Postulated Turbine Deblading (81-GT-19) (A) **Je 105**

Turbine Design
Effect of Turbine Design and Operational Factors on Plant Heat Rate (81-JPGC-Pwr-36) (A) **D 93**

Turbine Discs
Stress Corrosion Cracking of Low Pressure Turbine Discs—An Industry Survey (81-JPGC-Pwr-30) (A) **D 92**

Turbine Efficiency
A Mean Line Prediction Method for Axial Flow Turbine Efficiency (81-GT-58) (A) **Je 109**

Turbine Generating Units
Packaged Small Hydropower (ES) **Ag 21**

Turbine-Generator Units
Exhaust Heat Generates Electricity (IF) **Ag 50**

Turbine Generators
Generator Monitoring System (81-JPGC-Pwr-23) (A) **N 112**
Largest Consumer-Owned Power Plant (BTR) **F 57**

Turbine Materials
A Corrosion-Erosion Test Rig for High-Temperature Turbine Materials Evaluation (81-GT-198) (A) **JI 89**

Turbine Pyrometry
Turbine Pyrometry—An Equipment Manufacturer's View (81-GT-136) (A) **JI 85**

Turbine Rotors
An Investigation of a Preswirled Cooling Airflow to a Turbine Disc by Measuring the Air Temperature in the Rotating Channels (81-GT-132) (A) **JI 84**
Stability Analysis of Rotor Lifting Arrangement (80-WA/DE-10) (A) **Ap 98**

Turbine Shafts
Detection of a Transverse Crack in a Turbine Shaft—The Oak Creek Experience (81-JPGC-Pwr-19) (A) **N 112**
Fatigue and Fracture Analysis of Two Turbine Shafts (81-PVP-27) (A) **Ag 81**

Turbine Stages
Efficiency Prediction for Axial-Flow Turbines Operating With Nonconventional Fluids (81-GT-15) (A) **Je 105**
Measurement of Heat Flux and Pressure in a Turbine Stage (81-GT-88) (A) **Je 111**

Turbine Vanes
Thermal and Flow Analysis of a Convection, Air-

Coated Ceramic Coated Porous Metal Concept for Turbine Vanes (81-HT-48) (A) **O 97**

Turbines

An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) (A) **Ja 97**

Critical Heat Flux in the Channels of a Closed-Loop Water-Cooled Turbine (81-HT-74) (A) **O 98**

Determining Turbine Throttle Flow from Measured Frist Stage Shell Pressure—A Critical Assessment (81-JPGC-Pwr-17) (A) **N 112**

Kaplan Turbine Named Landmark (NR) **Ap 74**

Utility Considerations for Turbine Supervisory Instrumentation (81-JPGC-Pwr-24) (A) **N 112**

VAWTDYN—A Numerical Package for the Dynamic Analysis of Vertical Axis Wind Turbines (80-WA/Sol-18) (A) **Ap 94**

'Wind Farm' Producing Electric Power (BTR) **My 48**

Turbo Machine Set

Design of Turbo Machine Set for Fluid Catalytic Cracking Plant and its Shop-Testing Under Full-Load Conditions (81-GT-101) (A) **Je 112**

Turbocharger Compressors

The Effect of Impeller Tip Design on the Performance of a Mixed Flow Turbocharger Compressor (81-GT-7) (A) **Je 104**

Turbochargers

Development and Testing of a Ceramic Turbocharger Rotor (81-GT-195) (A) **Jl 89**

Turbodrills

Mud Pulse Tachometer for Downhole Drilling Motors (81-Pet-3) (A) **My 88**

Turbofan Engines

Effect of Time-Dependent Flight Loads on Turbofan Engine Performance Deterioration (81-GT-203) (A) **Jl 90**

Pattern Factor Improvement in the F-100 Primary Combustion System (81-GT-25) (A) **Je 105**

Suppressing Jet Buzz-Saw Noise (BTR) **Ja 63**

Turbojet Engines

A Family of Small, Low Cost Turbojet Engines for Short Life Applications (81-GT-205) (A) **Jl 90**

Nuclear Blast Response of Airbreathing Propulsion Systems: Laboratory Measurements with an Operational J-85-5 Turbojet Engine (81-GT-164) (A) **Jl 87**

Some Factors Affecting Altitude Relighting Performance of Turbojet Engine Combustor (81-GT-49) (A) **Je 108**

Turbomachinery

Application of Basic Aerothermodynamic Equations Governing Three-Dimensional Flow in Turbomachinery and Identification of Type of Equation (81-GT-142) (A) **Jl 84**

Development of a Large-Scale Wind Tunnel for the Simulation of Turbomachinery Airfoil Boundary Layers (81-GT-6) (A) **Je 104**

Improved Particle Trajectory Calculations Through Turbomachinery Affected by Coal Ash Particles (81-GT-53) (A) **Je 108**

Inverse or Design Calculations for Non-Potential Flow in Turbomachinery Blade Passages (81-GT-78) (A) **Je 110**

A Parametric Study of Dynamic Response of a Discrete Mode of Turbomachinery Bladed Disk (81-DET-137) (A) **D 91**

Turbomachinery Blades

Vibrations of Twisted Rotating Blades (81-DET-127) (A) **N 108**

Turbomachines

A Fast Numerical Procedure to Solve the Meridional Equations of Motion in a Multistage Axial Flow Turbomachine (81-GT-133) (A) **Jl 85**

Finite Element Methods for Transonic Blade-to-Blade Calculation in Turbomachines (81-GT-5) (A) **Je 104**

Measurement and Analysis of Total-Pressure Unsteadiness Data from a Axial-Flow Compressor Stage (81-Gr/GT-2) (A) **O 102**

Semi-Inverse Method of Computation in Inviscid Transonic Flows—Application to the Design of Turbomachine Blades Profiles (81-GT-206) (A) **Jl 90**

Spanwise Mixing in Axial-Flow Turbomachines (81-GT-57) (A) **Je 109**

Study of Secondary Flows in Blade Cascades of Turbomachines (81-Gr/GT-4) (A) **O 102**

Turbomachines: A Guide to Design, Selection and Theory (CB) **N 115**

Turboprop Fans

The Role of Flight Research Vehicles in Prop-Fan Technology Development (81-GT-216) (A) **Jl 91**

Turbopumps

Predicting Lifetime of Cost Parts (BTR) **Ja 59**

Turbulence

Effects of Free-Stream Turbulence on Diffuser Performance (81-FE-4) (A) **Ag 83**

Effects of Nozzle Exit Turbulence on the Spreading (or Widening) Rate of Plane Free Jets (81-FE-22) (A) **S 82**

Multiple-Scale Turbulence Modeling of Free Turbulent Flows (81-FE-20) (A) **S 82**

Reynolds Number and Ambient Turbulence Effects on the Nearfield Mean Characteristics of a Laboratory Model Thermal Plume (81-FE-7) (A) **S 81**

Turbulence Characteristics in the Annulus-Wall Boundary Layer and Wake Mixing Region of a Compressor Rotor Exit (81-GT-148) (A) **Jl 85**

Turbulence Structure

Turbulence Structure and Skin Friction in Turbulent Boundary Layers on Irregularly Rough Surfaces (81-FE-35) (A) **S 83**

Turbulent Boundary Layers

Analysis of the Roughness Function and Wall Law Slope for Rough Surface Turbulent Boundary Layers (81-FE-36) (A) **S 83**

Turbulence Structure and Skin Friction in Turbulent Boundary Layers on Irregularly Rough Surfaces (81-FE-35) (A) **S 83**

Turbulent Boundary Layer Heat Transfer Experiments: A Separate Effects Study on a Convexly Curved Wall (81-HT-78) (A) **O 98**

Turbulent Compressible Flow

Analysis and Asymptotic Solutions Compressible Turbulent Corner Flow (81-GT-149) (A) **Jl 86**

Turbulent Droplet Flow

Numerical Study of Turbulent Droplet Flow Heat Transfer (80-WA/HT-48) (A) **Ap 106**

Turbulent Flame

One-Dimensional Turbulent Flame Propagation in an Air-Fuel Droplet Mixture (80-WA/HT-37) (A) **Ap 105**

Turbulent Flow

Deposition of Suspensions in Turbulent Flow Over a Tilted Flat Plate (81-FE-28) (A) **S 82**

Effects of Wall Conduction on Heat Transfer for Turbulent Flow in a Circular Tube (81-HT-30) (A) **O 95**

Turbulent Flow Field

Statistical Properties of the Surface Pressure Distribution on a Yawed Cylinder in a Turbulent Flow Field (81-DET-35) (A) **O 103**

Turbulent Jet

Transition From a Turbulent Jet into a Turbulent Plume (81-FE-29) (A) **S 82**

Turbulent Plane Jet

The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-13) (A) **My 86**

Turbulent Plume

Transition From a Turbulent Jet into a Turbulent Plume (81-FE-29) (A) **S 82**

Turbulent Shear Flows

Kinematic and Dimensional Arguments on Derivative Skewness in Turbulent Shear Flows (81-FE-30) (A) **S 82**

Turbulent Upflow

Numerical Prediction of Wall Temperatures for Near-Critical Para-Hydrogen in Turbulent Upflow Inside Vertical Tubes (80-WA/HT-52) (A) **Ap 106**

Turbulent Wakes

Turbulent Wakes in Shallow Waters (81-FE-13) (A) **S 81**

Turcic, D. A. On the Periodic Response of Cam Mechanism with Flexible Follower and Camshaft (80-WA/DSC-33) (A) **Mr 116**

Turner, J. H. A Monte Carlo Procedure for Two-Dimensional Steady Conduction at Straight Convecting Boundaries (80-WA/HT-42) (A) **Ap 105**

Turner, R. F. The Role of Advanced Converters (80-WA/NE-6) (A) **Je 96**

Turner, R. L. Experimental Determination of Lateral Vibration of the 708 MVA Westinghouse Vertical Hydro Generators at Grand Coulee Dam, Washington (81-DET-70) (A) **N 106**

Turner, W. D. Diffuse Sky Measurements and Determination of Corrected Shadow Band Multiplication Factors (80-WA/Sol-26) (A) **Ap 94**

Turning

A Data Dependent Systems Approach to Dynamics of Surface Generation in Turning (80-WA/Prod-25) (A) **My 83**

In-Process Measurements of Surface Roughness in Turning by Laser Beams (80-WA/Prod-17) (A) **My 83**

Turret Lathe

Hex Bed Turret Converts Any Engine Lathe to a Turret Lathe (BTR) **F 55**

Tutorial Workshops

Tutorial Workshops at JACC (NR) **My 60**

Tuttle, M Fatigue and Fracture Analysis of Two Turbine Shafts (81-PVP-27) (A) **Ag 81**

Tweed, L. W. A Case Study of the Use of Experimental Modal Analysis as a Problem Solving Technique (81-DET-31) (A) **O 103**

Twelve-Digit Code

Use of Figures of Merit in Computer-Aided Material and Manufacturing Process Selection (81-DET-103) (A) **N 107**

Twist Drills

Signature Analysis Applied to Drilling (81-DET-9) (A) **D 88**

Twisted Rotating Blades

Vibrations of Twisted Rotating Blades (81-DET-127) (A) **N 108**

Two-Dimensional Motion Control

Design Method to Improve the Performance of Two-Dimensional Motion Control (81-DET-120) (A) **N 108**

Two-Phase Flow

Analysis of Two-Phase Flow Solar Collectors with Applications to Heat Pumps (80-WA/Sol-32) (A) **Ap 94**

An Application of Mixture Theory to Particulate Sedimentation (80-WA/APM-1) (A) **Ja 99**

Sizing Valves for Two-Phase and Subcooled Liquid Flows (80-WA/HT-64) (A) **My 85**

Two-Spool Gas Turbine Engine

A Study of the Model Truncation Error in the Component Mode Analysis of a Dual-Rotor System (81-GT-144) (A) **Jl 84**

Unbalance Response of a Two-Spool Gas Turbine Engine with Squeeze Film Bearings (81-GT-219) (A) **Jl 90**

Two-Stage Combustors

Premixing and Flash Vaporization in a Two-Stage Combustor (81-GT-41) (A) **Jl 106**

Two-Stroke Engine

A LH2 Engine Fuel System on Board—Cold GH2 Injection into Two-Stroke Engine with LH2-Pump (81-HT-81) (A) **O 99**

Tzu Li, Y. *(author)* Technological Innovation in Education and Industry (CB) **F 128**

U

Uber, C. F. Analysis of Prestressed Double-Wall Tubing for LMFBR Steam Generators (81-PVP-25) (A) **Ag 81**

Ueda, S. Design Method to Improve the Performance of Two-Dimensional Motion Control (81-DET-120) (A) **N 108**

Ulcker, J. J., Jr. On the Dynamic Simulation of Large Nonlinear Mechanicl Systems: Part I—An Overview of the Simulation Technique. Substructuring and Frequency Domain Consideration (80-DET-66) (A) **Mr 107**; Part II—The Time Integration Technique and Time Response Loop (80-DET-67) (A) **Mr 107**

Ultrasonic Inspection

Grading Beef by Ultrasound (BTR) **Jl 54**

Ultrasonic Machining System

Ultrasonic Machining System (IF) **Jl 60**

Ultrasonic Waves

Topographical Representation of Interface Pressure Distribution in a Multiple Bolt-Flange Assembly-Measurement by Means of Ultrasonic Waves (81-DE-7) (A) **Ag 78**

Ultrasonics
Ultrasonic Device Tests and Measures Tire Treads (IF) **Ag 51**
Ultraviolet Light
Cleaning Water Without Chemicals (EN) **My 71**
Ultraviolet Photography
Detecting Contaminants by Ultraviolet Photography (BTR) **Ap 59**
Umbrella Transients
Method of Analysis of CRBRP Transients for the Steam Generator (81-JPGC-NE-5) (A) **N 109**
Umetani, Y. The Basic Motion Regulation System for a Quadruped Walking Vehicle (80-DET-34) (A) **F 120**
Unbalance Responses
Comparison of the Unbalance Responses of Jeffcott Rotors with Shaft Bow and Shaft Runout (81-DET-47) (A) **D 89**
Unbalanced Rotor
Acceleration of Unbalanced Rotor Through the Resonance of Supporting Structure (81-APM-24) (A) **S 85**
Unbalances
Method of Determining Locations of Unbalances in Rotating Machines (81-DET-12) (A) **D 88**
Unbonded Contact
On the Unbonded Contact Between Plates and Layered Cylinders (80-WA/APM-11) (A) **Ja 100**
Unconfined Ceilings
Heat Transfer from a Buoyant Plume to an Unconfined Ceiling (81-HT-7) (A) **S 89**
Undamped Beam System
A Microprocessor-Based Interactive Beam Analysis Program with Graphics—Dynamic and Static (81-DE-12) (A) **Ag 78**
Undergraduate Courses
Curriculum Materials in Engineering Ethics (EN) **D 79**
Undergraduates
Make Grad School More Attractive (C) **Jl 46**
M.S. and Ph.D. Shortage Threatens Reindustrialization (EN) **F 66**
Underground Coal Production
Continuous Miner Noise (80-WA/NC-4) (A) **F 123**
Underground Mining
Personal Equipment Development for Use in Underground Mining (81-ENAs-48) (A) **O 101**
Underground Mining Equipment
A Role for Boeing in Coal (ES) **Ja 21**
Undersea Tasks
A Linear Impact Tool for Diver Use (81-DE-11) (A) **Ag 78**
Undersea Work Systems
Undersea Work Systems (Ocean Engineering Series, Vol. 1) (CB) **Ag 85**
Undertrack Pits
Continuous Vacuum Pressure Systems (80-WA/MH-2) (A) **Ap 96**
Undulations
Road Vehicle Train Response to Random Road Surface Undulations (80-WA/DSC-1) (A) **Mr 114**
Unequal Flows
Designing for Three Parallel ID Fan Operation (81-JPGC-Pwr-8) (A) **N 111**
Ungan, A. Predictions of Radiative Properties of Pulverized Coal and Fly-Ash Polydispersions (81-HT-24) (A) **O 94**
Unified Treatment
A Unified Analysis of Concurrent Modes of Flame Spread (81-HT-10) (A) **O 94**
Uniform Crossflow
Fluidelastic Instability of an Infinite Double Row of Circular Cylinders Subject to a Uniform Crossflow (81-DET-24) (A) **D 89**
Uniform Wall Temperature
Analysis of Laminar Forced Convection Heat Transfer in the Entrance Region of a Flat Duct with Uniform Wall Temperature (81-HT-29) (A) **O 95**
Unigraphics
Computer-Aided Design (EN) **Ja 74**
Unions
Thoughts on Freedom (C) **Ja 48**
Unit Coal Train Cars
Unit Train Coal Car Design Considerations (81-RT-3) (A) **Ag 77**
Unit Handling
Economic Considerations for Automating Unit Handling and Storage (80-WA/MH-6) (A) **Ap 96**
Unit Handling—Problems and Opportunities (80-WA/MH-7) (A) **Ap 96**
Vehicular Operations and New Developments in Unit Handling (80-WA/MH-5) (A) **Ap 96**
Unit Heaters
Fuel-Efficient Unit Heater (BTR) **Ja 58**
Unit Size
Coal-Fired Unit Size Selection . . . Is Bigger Better? (81-JPGC-Pwr-34) (A) **D 93**
Units
Speaking of SI . . . (C) **Ag 42**
Universal Joints
Heat-Shrinkable Sleeve Aids in Installing Universal Joints (BTR) **Ja 57**
Universal Motors
Speed Control for Universal Motors (81-DE-1) (A) **Ag 77**
Universe
Neutrinos and the Nature of the Universe (BTR) **Ja 54**
Seeing Halfway Back to the Beginning (BTR) **Je 67**
Zeroing in on the Big Bang (BTR) **O 58**
Universities
Education Issues (C) **Ap 54**
Universities/Industries
University-Industry Program at Columbia (EN) **F 68**
Unleaded Gasoline
Fuel Facts (C) **Ja 49**
Octane-Booster Optimism (ES) **Ap 29**
Unloaders
Pneumatic Unloading of Ships and Barges (80-WA/MH-10) (A) **Ap 97**
Unlubricated Sliding
Interactions Between Dynamic Normal and Frictional Forces During Unlubricated Sliding (81-Lub-15) (A) **D 97**
Unmanned Work Systems
The Motion Compensation Deck Handling System for the Remote Unmanned Work Systems (80-WA/OCE-11) (A) **Ap 97**
Unsafe Products
Should Government Control Exports of Unsafe Products? (STV) **Ja 77**
Unsaturated Soils
Transient Simultaneous Heat and Mass Transfer in Moist, Unsaturated Soils (81-HT-50) (A) **O 97**
Unsteady Film Cooling
Experimental Determination of Transition Reynolds Number for Unsteady Film Cooling (81-GT-94) (A) **Je 111**
Unsteady Rotor Response
The Influence of Unsteady Rotor Response on a Distorted Flow Field (81-GT-185) (A) **Jl 89**
Updike, D. P. Delamination of Layered Cylindrical Shells Under Internal Pressure (80-WA/PVP-7) (A) **Ja 98**
Upper Hot Layer Stratification
An Experimental Study of Upper Hot Layer Stratification in Full-Scale Multiroom Fire Senarios (81-HT-9) (A) **S 89**
Upsetting
Axisymmetric Upset Forging: A Semi-Empirical Approach (80-WA/Prod-21) (A) **My 83**
Upstream Shear
The Effects of Roughness and Shear on Vortex Shedding Cell Lengths Behind a Circular Cylinder (81-FE-24) (A) **S 82**
Uram, E. M. Analysis of the Roughness Function and Wall Law Slope for Rough Surface Turbulent Boundary Layers (81-FE-36) (A) **S 83**
Uranium
Gmelin Handbuch der Anorganischen Chemie, 8th Ed. Uran Ergänzungshand A2 (CB) **Ap 109**
Uranium Resources
The Role of Advanced Converters (80-WA/NE-6) (A) **Ja 96**
Uranium Utilization
Role of Advanced Reactors in Electricity Generation (80-WA/NE-7) (A) **Ja 97**
Urban, E. W. Development and Integration of the Infrared Telescope for Spacelab (81-ENAs-16) (A) **S 86**
Urban Parameters
Effects of Pollutants and Urban Parameters on Atmospheric Temperature (80-WA/HT-4) (A) **Ap 103**
Urine Vapor
Water Recovery by Catalytic Treatment of Urine Vapor (80-ENAs-16) (A) **Mr 112**
Usab, W. J., Jr. A Quasi-Three-Dimensional Blade Surface Boundary Layer Analysis for Rotating Blade Rows (81-GT-126) (A) **Je 114**
Useful Fuels
Fuels from Waste (CB) **N 116**
Usui, S. Use of a Tracer Gas Technique to Study Mixing in a Low Speed Turbine (81-GT-86) (A) **Je 111**
Utilities
Overview of Unconventional Energy Projects in the Public Power Sector (81-DGP-1) (A) **My 87**
Servicing the Nuclear Customer (ES) **Ag 20**
Utility Boilers
Conceptual Design of a Coal Fired Utility Boiler for Cycling Duty (80-JPGC/Pwr-16) (A) **F 117**
Drum Level Instrumentation for Reliable Boiler Operation (81-JPGC-Pwr-21) (A) **N 112**
Exxon Thermal DeNO$_x$ Process for Utility Boiler Applications (81-JPGC-Fu-9) (A) **D 94**
Overview of Major Causes of Pulverizer Failures (80-JPGC/Pwr-5) (A) **F 116**
Utility Combustion Turbine
Shale Oil Power (ES) **Mr 37**
Utility Considerations
Utility Considerations for Turbine Supervisory Instrumentation (81-JPGC-Pwr-24) (A) **N 112**
Utility Gas Turbines
Evaluation of Advanced Combustors for Dry NO$_x$ Suppression with Nitrogen Bearing Fuels in Utility and Industrial Gas Turbines (81-GT-125) (A) **Je 113**
Utility Requirements
A Baseload Gas Turbine to Meet Utility Requirements for Reliability and Availability (81-GT-127) (A) **Jl 84**
Utility Turbines
Use of Cascade and Small Turbine Tests to Determine Erosion of Utility Turbines (81-GT-52) (A) **Je 108**

V

Vacca, R. *(author)* Modest Technologies for a Complicated World (CB) **My 92**
Vachon, R. I. Economic Analysis and Optimization of Solar Residential Space Heating (80-WA/Sol-11) (A) **Ap 93**
Vacuum Pressure Systems
Continuous Vacuum Pressure Systems (80-WA/MH-2) (A) **Ap 96**
Vacuum-Relief
Draining of Tanks with Submerged Outlets or Without Vacuum-Relief (81-FE-21) (A) **S 82**
Vacuum Storage
Dormavac—Long-Term Storage of Perishable Commodities (80-ENAs-1) (A) **Mr 111**
Vajpayee, S Effects of Process Parameters on Hammer Noise (81-DET-95) (A) **N 108**
Vaka, G. A. Power Generation Using a Downhill Conveyor (80-WA/MH-15) (A) **Ap 97**
Valve Actuators
Dynamic Evaluation of a Nuclear Main Steam Isolation Valve Actuator (81-DET-32) (A) **O 104**
Valve Noise
A Study of Valve Noise Generation Processes for Compressible Fluids (80-WA/NC-15) (A) **F 125**
Valves
Aerodynamic Noise Generation in Control Valves (80-WA/NC-8) (A) **F 124**
Eliminating Human Error (ES) **N 71**
Process Piping Systems (CB) **N 115**
Response of Two Nuclear Power Plant Valves to Dynamic Excitation (81-DET-67) (A) **D 90**
Sizing Valves for Two-Phase and Subcooled Liquid Flows (80-WA/HT-64) (A) **My 85**
Spurious Opening of Hydraulic-Assisted, Pilot-Operated Valves—An Investigation of the Phenomenon (81-PVP-39) (A) **Ag 82**
Van Bladeren, J. Elections to Fellow Grade **F 114**
Van Buijtenen, J. P. Mechanical Design of a High-Efficiency 7.5-MW (10,000-hp) Gas Turbine (81-GT-210) (A) **Jl 90**
Van Den Braembussche, R. A. Correction for Streamline Curvature and Coriolis Force in a Boundary Layer Integral Method (81-GT-97) (A) **Je 111**
Van Dijk, J. J. Th. Re-Examination of Design Criteria

for Natural Gas Compressor Station "Ravenstein"—Holland (81-GT-188) (A) **JI 88**

Van Fossen, G. J. Heat Transfer Coefficients for Staggered Arrays of Short Pin Fins (81-GT-75) (A) **Je 110**

Van Handle, H. R. Power Plant Noise Control (81-JPGC-Pwr-15) (A) **N 111**

van Leewen, H. J. Dynamic Analysis of Rocking Journal Bearings with Multiple Offset Segments (81-Lub-34) (A) **D 98**

Van Overveen, J. Plaque Piece Praised (C) **S 49**

van Vliet, M. Computer-Aided Analysis and Experimental Verification of a Motorcycle Suspension (81-DET-84) (A) **D 90**

Vanadium Inhibition

Gas Turbine Vanadium Inhibition (81-GT-187) (A) **JI 88**

Vance, J. M. Failure Analysis and Expert Witness for Products Liability—A Responsibility for the Engineering Profession (80-WA/Mgt-6) (A) **Ja 103**

Vanderbilt University

Centennial Issue: Kudos and Comments (C) **Ja 48**

Vandiver, J. K. The Determination of Modal Damping Ratios from Maximum Entropy Spectral Estimates (80-WA/DSC-29) (A) **Mr 116**; A Mathematical Basis for the Random Decrement Vibration Signature Analysis Technique (81-DET-13) (A) **N 104**

Vaneless Diffusers

Effects of Vaneless Diffuser Geometry on Flow Instability in Centrifugal Compression Systems (81-GT-10) (A) **Je 104**

Vanes

Dynamic Response of Blades and Vanes to Wakes in Axial Turbomachinery (81-DET-33) (A) **O 103**

Fiber Optic Probes Monitor Engine Condition **Ja 37**

Some Technological Problems Associated with the Manufacture of Blades and Vanes for Stationary Gas Turbines in the USSR (81-GT-173) (A) **JI 88**

Vaniman, J. L. Thermal Design of the Space Shuttle External Tank (81-ENAs-15) (A) **S 87**

Vapor

Parametric Effects on Vapor Non-Equilibrium in Post-Dryout Heat Transfer (80-WA/HT-50) (A) **Ap 107**

A Three-Dimensional Air-Vapor-Droplet Local Interaction Model for Spray Units (81-HT-18) (A) **O 94**

Vapor Compression Distillation

Application of Improved Technology to a Preprototype Vapor Compression Distillation (VCD) Water Recovery Subsystem (81-ENAs-10) (A) **S 86**

Preprototype Vapor Compression Distillation Subsystem Development (81-ENAs-25) (A) **S 87**

Vaporization

A Study of External Fuel Vaporization (81-GT-158) (A) **JI 86**

Variable Cross Section

Rotational Inviscid Flow in a Variable Area Annulus, Pipe or Channel (80-WA/FE-14) (A) **My 86**

Variable-Speed Transmission

Getting 95 Miles per Gallon with New Transmission (EN) **Ag 68**

Variators

Dynamic Analysis of Variators with Half Ball and Two Discs as Non-Holonomic Systems (80-DET-95) (A) **Mr 109**

Vatta, F.

The Block-Lift in Axial Piston Hydraulic Motors (81-FE-25) (A) **S 82**

Vehicles

Nonstationary Response of Vehicles on Rough Ground—A State Space Approach (80-WA/DSC-22) (A) **Mr 116**

Vehicular Fuel

Liquid Hydrogen as a Vehicular Fuel: An Evaluation **My 24**

Vehicular Operations

Vehicular Operations and New Developments in Unit Handling (80-WA/MH-5) (A) **Ap 96**

Vehicular Power Units

ITI GT601-A New Approach to Vehicular Gas Turbine Power Unit Design (81-GT-152) (A) **JI 86**

Velinsky, S. Axial Response of Oval Wire Ropes (80-WA/OCE-3) (A) **Ap 97**

Velocity

A Round Jet Normal to a Cross-Flow (80-WA/FE-10) (A) **My 86**

Velocity Distribution

Developing Region of Laminar Jets With Parabolic Exit Velocity Profiles (81-FE-3) (A) **Ag 82**

An Inverse Time Marching Method for the Definition of Cascade Geometry (81-GT-167) (A) **JI 87**

Velocity Insertion Loss

Point Admittance of Cylindrical Shells With and Without Ring-Stiffening (80-WA/NC-5) (A) **F 124**

Velocity Profile

Rotational Inviscid Flow in a Variable Area Annulus, Pipe or Channel (80-WA/FE-14) (A) **My 86**

Velocity Readings

Infrared Sensing Device (IF) **Ja 67**

Velocity Similarity Laws

Roughness Characteristics of Plane Surfaces Based on Velocity Similarity Laws (81-FE-34) (A) **S 83**

Venkayya, V. B. Dynamic Analysis of High Speed Rocket Sleds (81-DET-42) (A) **O 104**

Vent Holes

Arrays of Impinging Jets With Spent Fluid Removal Through Vent Holes on the Target Surface, Part 2: Local Heat Transfer (81-HT-76) (A) **O 99**

Ventilation

Forced Ventilation Envelope House: Computer Simulations (80-WA/Sol-5) (A) **Ap 92**

Pollution Problem in Energy-Tight Buildings (BTR) **Ja 58**

Venting

The Venting Characteristics of a Fibrous Thermal Barrier System During a Rapid Depressurization Accident (Rotor Failure) in an HTGR-GT (81-GT-14) (A) **Je 105**

Venturi Scrubber

Fly Ash Removes SO_2 (BTR) **F 56**

Venturion

Fuel-Efficient Unit Heater (BTR) **Ja 58**

Venus Greehouse Effect

Greenhouse Effect on Venus (BTR) **Ag 46**

Verelst, J. Surface Tension Effects During Condensation on a Horizontal Tube (81-HT-26) (A) **O 95**

Verification Testing

Spacelab Thermal System Analysis Approach and First Results of System Verification Testing (80-ENAs-21) (A) **Mr 112**

Vertical Axis Wind Turbines

VAWTDYN—A Numerical Package for the Dynamic Analysis of Vertical Axis Wind Turbines (80-WA/Sol-18) (A) **Ap 94**

Vertical Cylinders

Buoyancy Effects on a Boundary Layer Along an Infinite Vertical Cylinder with a Step Change of Surface Temperature (80-WA/HT-25) (A) **Ap 104**

Frost Formation on Vertical Cylinders in Free Convection (80-WA/HT-22) (A) **Ap 104**

Vertical Elements

De-Entrainment on Vertical Elements in Air Droplet Cross Flow (80-WA/HT-46) (A) **Ap 106**

Vertical Heated Surfaces

A Study of Non-Darcy Natural Convection from a Vertical Heated Surface in a Saturated Porous Medium (81-HT-45) (A) **O 97**

Vertical Plates

Transient Laminar Mixed Convection from a Moving Vertical Plate (81-HT-40) (A) **O 96**

Vertical Shaft Systems

Experimental Determination of Lateral Vibration of the 708 MVA Westinghouse Vertical Hydro Generators at Grand Coulee Dam, Washington (81-DET-70) (A) **N 106**

Vertical Tubes

Numerical Prediction of Wall Temperatures for Near-Critical Para-Hydrogen in Turbulent Upflow Inside Vertical Tubes (80-WA/HT-52) (A) **Ap 106**

Vertical U-Tubes

U-Tube PWR Steam Generator Heat Transfer During a Large Loss of Coolant Accident Transient (80-WA/HT-61) (A) **My 84**

Vertical Walls

Shape Change of an Initially Vertical Wall Undergoing Condensation Driven Melting (81-HT-12) (A) **S 89**

Vessely, J. E. Storm Over S-T View (C) **Ja 51**

Viadero, F. A Simple Numerical Method for the Kinematic Analysis of Spatial Mechanisms (80-DET-23) (A) **F 120**

Vibrating Hammers

Dynamic Stability of a Vibrating Hammer (81-DET-14) (A) **D 88**

Vibrating Systems

Comparison of Equivalent Viscous Damping and Nonlinear Damping in Discrete and Continuous Vibrating Systems (81-DET-89) (A) **D 90**

Vibration

Analysis of Plate Vibrations Using Superelements (81-DET-65) (A) **N 106**

Analytical Prediction of Aerospace Vehicle Vibration Environments (81-DET-29) (A) **O 103**

Asymmetric Free Vibrations of Layered Conical Shells (81-DET-68) (A) **D 90**

Circular Saw Vibration Control by Induction of Thermal Membrane Stresses (80-WA/Prod-8) (A) **My 82**

Component Mode Synthesis of Large Rotor Systems (81-GT-147) (A) **JI 85**

A Double Summation Procedure for the Combination of Seismic Responses of Multiple-Excited Piping Systems (80-WA/PVP-1) (A) **Ja 97**

Early Detection of Cross-Sectional Rotor Cracks by Turbine Shaft Vibration Monitoring Techniques (81-JPGC-Pwr-26) (A) **N 112**

The Effect of Approach Flow Direction on the Flow Induced Vibrations of a Triangular Tube Array (81-DET-25) (A) **N 105**

Eigenvalue Derivatives for Damped Torsional Vibrations (81-DET-53) (A) **N 105**

Experimental Determination of Vibration Parameters Required in the Statistical Energy Analysis Method (81-DET-19) (A) **N 104**

Experimental Investigation on the Vibratory Characteristics of an Industrial Steam Turbine LP-Runner Blade With Lacing-Wire (81-DET-134) (A) **N 108**

Experimental Investigation on the Vibratory Characteristics of an Industrial Steam Turbine LP-Runner Blade With Lacing-Wire (81-DET-134) (A) **N 106**

Fail-Safe Vibration Control Using Active Force Generators (81-DET-85) (A) **N 106**

Flow Induced Vibrations of Heat Exchanger U-Tubes, A Simulation to Study the Effects of Asymmetric Siffness (81-DET-20) (A) **D 89**

Formulas of Natural Frequency Prediction for Thin Circular Cylinders (81-DET-77) (A) **O 105**

Fundamental Study on Semi-Actively Controlled Pneumatic Servo Suspensions for Rail Cars (81-RT-6) (A) **Ag 76**

Improved Jet Engine Maintenance Through Automated Vibration Diagnostic Systems (81-GT-62) (A) **Je 109**

Investigation of Vibration of Shrouded Turbine Blades (81-DET-129) (A) **N 108**

Large Amplitude Elliptical Plate Vibration With Transverse Shear and Rotatory Inertia Effects (81-DET-66) (A) **N 106**

A Mathematical Basis for the Random Decrement Vibration Signature Analysis Technique (81-DET-13) (A) **N 104**

A Model for the Analysis of Air Heater Vibrations (81-DET-34) (A) **O 103**

A New Method of Modeling Gear Faults (81-DET-10) (A) **D 88**

Nonlinear Vibration of Layered Composite Plates Including Transverse Shear and Rotatory Inertia (81-DET-144) (A) **D 91**

On Predicting Vibrations in Realistically Proportioned Linkage Mechanisms (80-DET-4) (A) **F 118**

Protection of Continuous Structures Against Vibrations by Active Damping (81-DET-88) (A) **N 106**

Pulsation of High Pressure Turbine (80-JPGC/Pwr-14) (A) **F 117**

Real-Time Vibration Rate Acquisition and Signal Processing Using a Low-Cost Microcomputer (81-DET-28) (A) **O 103**

Residual Vibration Criteria Applied to Multiple Degree of Freedom Cam Followers (80-DET-3) (A) **F 118**

Rotating Blade Vibration Analysis Using Shells (81-GT-80) (A) **Je 110**

The Spine of the Root Locus for the Viscous Damper (81-DET-4) (A) **O 102**

Vibration Analysis of a Flexible System Mounted on a Viscoelastic Sandwich Beam (81-DET-64) (A) **N 106**

Vibration Analysis of a Large Naval Gear (81-DET-142) (A) **D 91**
Vibration Measurement of a Moving Tangential Drive Belt (81-DET-36) (A) **O 104**
A Vibration Source in Refrigerant Compressors (81-DET-72) (A) **O 104**
Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) (A) **S 85**
Vibrations of Cylindrical Shells With Time-Dependent Boundary Conditions (81-PVP-21) (A) **Ag 80**
Vibrations of an Elastically Mounted Spinning Rotor Partially Filled with Liquid (81-DET-54) (A) **D 89**
Vibrations of Long Marine Pipes Due to Vortex Shedding (81-Pet-29) (A) **My 91**
Vibrations of Rectangular Plates With Nonuniform Elastic Edge Supports (80-WA/APM-28) (A) **Ja 102**
Vibrations of Solid Cylinders (80-WA/APM-20) (A) **Ja 101**
Vibrations of Twisted Rotating Blades (81-DET-127) (A) **N 108**
Vincent's Circle as a Tool for Machine Vibration Optimization Techniques (81-DET-78) (A) **O 105**

Vibration Absorbers
Optimal Design of Linear and Nonlinear Vibration Absorbers for Damped Systems (81-DET-83) (A) **N 105**

Vibration Amplitudes
Determination of Vibration Amplitudes and Stresses Using the Holography Interference Techniques and Finite Element Method (81-DET-132) (A) **N 108**

Vibration Signals
Analysis of Fly-Shuttle Loom Noise by Multi-Channel Digital Signal Processing Techniques (81-DET-100) (A) **N 106**

Vibrational Data
Bearing Fault Detection Using Adaptive Noise Cancelling (81-DET-7) (A) **D 88**

Vibrational Level
Energy Input, Vibrational Level and Machinery Noise; Some Simple Relationships (81-DET-96) (A) **N 106**

Vibrational Response
Assessment of the Dynamic Quality of a Class of Dwell-Rise-Dwell Cams (80-DET-83) (A) **Mr 108**

Vibratory Response
On Circular Pipe Wall Vibratory Response Excited by Internal Acoustic Fields (80-WA/NC-13) (A) **F 124**

Vibro-Impact
An Efficient Technique for the Approximate Analysis of Vibro-Impact (81-DET-16) (A) **N 104**

Victor, F. Acceleration of Unbalanced Rotor Through the Resonance of Supporting Structure (81-APM-24) (A) **S 85**

View Factors
Computation of Radiation View Factors for Surfaces with Obstructed Views of Each Other (81-HT-57) (A) **O 98**

Viking Orbiter 1
Mars Mosaic (BTR) **N 75**

Viking Spacecraft
Martian Phenomena Discovered by Viking (BTR) **Jl 53**

Vincent's Circle
Vincent's Circle as a Tool for Machine Vibration Optimization Techniques (81-DET-78) (A) **O 105**

Vinciguerra, A. Kinematic Analysis of Plate Cam Profiles Not Analytically Defined (80-DET-12) (A) **F 119**

Virus Research
Wastewater Reuse Triggers Virus Research (NB) **D 78**

Viscoelastic Core
Response of Sandwich Panels with Viscoelastic Core Under Random Excitation at a Point (81-DET-43) (A) **O 104**

Viscoelastic Properties
Particulate Ingression Past Elastomeric Linear Motion Seals (81-DE-10) (A) **Ag 78**

Viscoelasticity
Approximate Laplace Transform Inversion in Dynamic Viscoelasticity (80-WA/APM-29) (A) **Ja 102**
A Nonlinear Theory of Viscoelasticity for Application to Elastomers (80-WA/APM-18) (A) **Ja 100**

Viscoplastic Behavior
Transition From Brittle to Ductile Fracture for a Rapidly Propagating Crack (81-PVP-16) (A) **Ag 80**

Viscoplastic Lubrication
Viscoplastic Lubrication of Asperities (81-Lub-43) (A) **D 99**

Viscoplasticity
A Theory of Multiaxial Anisotropic Viscoplasticity (81-APM-21) (A) **S 85**

Viscous Damper
The Spine of the Root Locus for the Viscous Damper (81-DET-4) (A) **O 102**

Viscous-Viscoelastic Model
Creep and Creep Recovery of 304 Stainless Steel Under Combined Stress With a Representation by a Viscous-Viscoelastic Model (80-WA/APM-10) (A) **Ja 100**

Vision
Seeing Machines: Current Industrial Applications **N 52**

Viskanta, R. Effects of Pollutants and Urban Parameters on Atmospheric Temperature (80-WA/HT-4) (A) **Ap 103;** Predictions of Radiative Properties of Pulverized Coal and Fly-Ash Polydispersions (81-HT-24) (A) **O 94**

Visual Environment
Realistic Lighting Levels (BTR) **S 53**

Vitiation
Effects of Vitiation on Axial Catalyst Bed Temperature Profiles (81-GT-141) (A) **Jl 84**

Vogel, C. G. Retrofitting Utility Power Plants for Cogeneration Using Crossover Pressure Control (81-JPGC-Pwr-33) (A) **D 93**

Vogel, E. F. An Adaptive Dead Time Compensator for Process Control (80-WA/DSC-10) (A) **Mr 115**

Vogt, G. A. Process Design Conditions for Boiler Blowdown System (81-PVP-37) (A) **Ag 82**

Volcanoes
Probing the Secrets of Vulcan (BTR) **Ja 53**

Voltage Drop
MHD Electrode Performance; Heat Transfer and Voltage Drop (80-WA/HT-10) (A) **Ap 104**

Volumetric Air Flow
A Reliability Design and Catastrophic Failure Model for Exhaust Systems (80-WA/Saf-1) (A) **Ja 103**

von Arx, A. V. Method of Analysis of CRBRP Transients for the Steam Generator (81-JPGC-NE-5) (A) **N 109**

von E. Doering, H. Application of Water Cooling for Improved Gas Turbine Fuel Flexibility and Availability (81-GT-68) (A) **Je 109**

von Klein Smid, W. H. Methanol Combustion in a 26-MW Gas Turbine (81-GT-64) (A) **Je 109**

von Schonfeldt, H. Application of Coal Flash Pyrolysis to Industrial Power Generation (81-IPC-Fu-4) (A) **D 101**

Vortex Combustion
The CIVIC—A Concept in Vortex Induced Combustion, Part II (81-GT-12) (A) **Je 105**

Vortex Shedding
On the Acoustical Implications of Vortex Shedding from an Exhaust Pipe (80-WA/NC-16) (A) **F 125**
The Effects of Roughness and Shear on Vortex Shedding Cell Lengths Behind a Circular Cylinder (81-FE-24) (A) **S 82**
Vibrations of Long Marine Pipes Due to Vortex Shedding (81-Pet-29) (A) **My 91**

W

Wachter, J. Experimental Investigation on the Vibratory Characteristics of an Industrial Steam Turbine LP-Runner Blade With Lacing-Wire (81-DET-134) (A) **N 108;** Investigation of Vibration of Shrouded Turbine Blades (81-DET-129) (A) **N 108;** Measurement of the Influence of Flow Distortions on the Blade Vibration Amplitude in an Air Turbine (81-DET-135) (A) **D 91**

Wadia, A. R. Rotor-Tip Leakage: Part II—Design Optimization Through Viscous Analysis and Experiment (81-GT-72) (A) **Je 110**

Waghorne, R. Effects of Amplitude of Oscillation on the Wear of Dry Bearings Containing PTFE (81-Lub-6) (A) **D 96**

Wahlig, M. Dynamic Modeling and Experimental Simulation of Active Solar Energy Systems for the Evaluation of Control Strategies (80-WA/Sol-14) (A) **Ap 93**

Wakeman, R. E. Nuclear Name Calling (C) **S 49**

Wakes
Universal Similarity in the Wakes of Stationary and Vibrating Bluff Structures (80-WA/FE-4) (A) **My 85**

Wald, G. Utility Considerations for Turbine Supervisory Instrumentation (81-JPGC-Pwr-24) (A) **N 112**

Waldron, K. J. The Dextrous Workspace (80-DET-108) (A) **Mr 110;** Implementation of Solution Rectification Techniques in an Interactive Linkage Synthesis Program (80-DET-91) (A) **Mr 109;** The Workspaces of a Mechanical Manipulator (80-DET-107) (A) **Mr 110**

Walker, S. *(author)* Boundary Element Techniques in Engineering (CB) **Ag 85**

Wall Conduction
Effects of Wall Conduction on Heat Transfer for Turbulent Flow in a Circular Tube (81-HT-30) (A) **O 95**

Wall Heating
An Integral Analysis for Incompressible Turbulent Thermal Boundary Layer Flow: Nonuniform Wall Heating (80-WA/HT-57) (A) **My 84**

Wall Law Slope
Analysis of the Roughness Function and Wall Law Slope for Rough Surface Turbulent Boundary Layers (81-FE-36) (A) **S 83**

Wall Layers
A Method for the Calculation of the Wall Layers Inside the Passage of a Compressor Cascade With and Without Tip Clearance (81-GT-168) (A) **Jl 87**

Wall Plume
Mixed Convection in a Wall Plume (81-HT-37) (A) **O 96**

Wallo, M. J. Portable Computerized Power Plant Equipment Testing **Mr 58**

Walowit, J. A. Analysis of Face Seals with Shrouded Pockets (81-DET-49) (A) **D 99;** Analytical and Experimental Investigation of Magnetic Support Systems. Part I: Analysis (81-DET-31) (A) **D 98;** Part II: Experimental Investigation (81-DET-32) (A) **D 98;** The Effects of Friction Between Cylinders and Rubber Staves of Finite Thickness (81-Lub-30) (A) **D 98**

Walsh, J. L. An Economic Comparison of Wood and Fossil Fuel Processing Systems (80-WA/Ener-1) (A) **Ap 95**

Walters, S. Tapping The Resources of a New 'Continent' **Je 26**

Waltz, R. J. Drum Level Instrumentation for Reliable Boiler Operation (81-JPGC-Pwr-21) (A) **N 112**

Wambsganss, M. W. Flow-Induced Tube Vibration Tests of Typical Industrial Heat Exchanger Configurations (81-DET-37) (A) **O 104**

Wan, R. Application of Adaptive Control to a Computer Controlled Process (80-WA/DSC-40) (A) **Mr 117**

Wang, A. J. Rotating Blade Vibration Analysis Using Shells (81-GT-80) (A) **Je 110;** Vibrations of Twisted Rotating Blades (81-DET-127) (A) **N 108**

Wang, C. R. Analysis for Predicting Adiabatic Wall Temperatures with Single Hole Coolant Injection into a Low Speed Crossflow (81-GT-91) (A) **Je 111**

Wang, H. F. Nocturnal Radiation from a Solar Collector (80-WA/Sol-35) (A) **Ap 95**

Wang Zhao Long
Effect of Blade Stagger Angle on Performance of a Transonic Compressor with Low Hub-Tip Ratio (81-GT-177) (A) **Jl 88**

Ward, M. E. Industrial Waste Heat Recovery (80-WA/HT-17) (A) **Ap 104**

Warmbrod, J. D. Thermal Design of the Space Shuttle External Tank (81-ENAs-15) (A) **S 87**

Warner, P. C. Vibration Analysis of a Large Naval Gear (81-DET-142) (A) **D 91**

Warping
On a Finite Element Formulation of Dynamical Torsion of Beams Including Warping Inertia and Shear Deformation Due to Nonuniform Warping (81-DET-140) (A) **D 91**

Warren, M., Jr. Elections to Fellow Grade **F 114**

Warren, M. L. Dynamic Modeling and Experimental Simulation of Active Solar Energy Systems for the Evaluation of Control Strategies (80-WA/Sol-14) (A) **Ap 93**

Washover
Hard-Surface Drill String Stabilizer Design Concept to Accommodate Washover Operations (81-Pet-4) (A) **My 88**
Waspaloy
Strengthening Mechanisms and Process Controls for Super Waspaloy (81-GT-175) (A) **Jl 88**
Waspaloy Forgings
Forging Simulations and Properties Achievable for Large Waspaloy Forgings for Land-Based Gas Turbines (81-GT-84) (A) **Je 110**
Wassell, A. B. A UK View on Future Fuels (81-GT-87) (A) **Je 111**
Wassell, M. Combined Friction and Material Damping of Resonant Steam Turbine Blade Response (81-DET-136) (A) **D 92**
Wasserberg, S. Air-Film Cooling Returns to Ramjets (81-ENAs-8) (A) **S 86**
Waste
Fuels from Waste (CB) **N 116**
Waste Ashes
Roadbeds from Waste Ashes (IF) **O 65**
Waste Disposal
PCB Destruction Technology (BTR) **S 53**
Questions for Nuclear Advocates (C) **My 42**
Recovering the Energy in Wastes (STV) **My 75**
Regional Facilities for Hazardous Waste Disposal (80-WA/MH-13) (A) **Ap 97**
Waste Energy
Aquifers Store Waste Energy (BTR) **Mr 70**
Waste Fluids
Development of a Preprototype Thermoelectric Integrated Membrane Evaporation Subsystem for Water Recovery (80-ENAs-46) (A) **Mr 114**
Waste Heat
Experience with the Heating Plant Heat Recovery System at The University of New Mexico (80-WA/HT-16) (A) **Ap 104**
Preliminary Design of Dry Cooling Tower for the Closed Cycle Gas Turbine HTGR (81-GT-20) (A) **Je 105**
Waste Heat Recovery
High Effectiveness Recuperator for Waste Heat Recovery Applications (80-WA/HT-15) (A) **Ap 104**
Industrial Waste Heat Recovery (80-WA/HT-17) (A) **Ap 104**
The Rebirth of the Rankine Cycle **Ja 41**
Waste Management
Hazardous Waste Management (BTR) **Mr 70**
Waste Management Systems
Generic Waste Management Requirements for a Controlled Ecological Life Support System (81-ENAs-23) (A) **O 100**
Waste Oxidation
Treatment of CELSS and PCELSS Waste to Produce Nutrients for Plant Growth (81-ENAs-19) (A) **O 100**
Waste Treatment
Wet Oxidation as a Waste Treatment in Closed Systems (81-ENAs-22) (A) **O 100**
Wastes
Energy from Biomass and Wastes (NB) **Jl 79**
RADTU Processes Wastes (BTR) **Je 66**
Wastewater
ETSI on Test (ES) **S 25**
Flower Power (BTR) **My 46**
NASA Technology Brings Recycled Water Closer to Home (BTR) **Je 68**
Wastewater Reuse Triggers Virus Research (NB) **D 78**
Wastewater Treatment System
Approve Space-Age Sewage Treatment System (BTR) **O 55**
Water
CO_2 Instead of Water (ES) **O 26**
Water Cleaning
Experience with In-Service Water Cleaning of Boiler Fireside Deposits (80-JPGC/Fu-6) (A) **Ja 99**
Water Conservation
Are Dry-Cooled Power Plants A Feasible Alternative? **O 34**
Water-Cooled Gas Turbines
Mechanical, Thermal and Hydraulic Design of a Composite Construction Water-Cooled Gas Turbine Nozzle (81-JPGC-GT-3) (A) **D 95**
Mechanical, Thermal and Hydraulic Design of a Monometallic Water-Cooled Gas Turbine Nozzle (81-HT-77) (A) **O 99**
Water-Cooled Gas Turbine Forged Bucket Development (81-GT-174) (A) **Jl 88**
Water-Cooled Test Cells
Noise Suppressors for Jet Engine Testing (80-ENAs-28) (A) **Mr 112**
Water Cooled Turbines
Critical Heat Flux in the Channels of a Closed-Loop Water-Cooled Turbine (81-HT-74) (A) **O 98**
Test Verification of Water Cooled Gas Turbine Technology (81-GT-66) (A) **Je 109**
Water Cooling
Application of Water Cooling for Improved Gas Turbine Fuel Flexibility and Availability (81-GT-68) (A) **Je 109**
Water Droplets
Radiative Heat Transfer to High Pressure Steam (81-HT-69) (A) **O 98**
Water Heaters
Heat Pump Water Heaters (ES) **Ap 29**
Water Heating
Design Procedure and Applications of Solar-Assisted Series Heat Pump Systems (80-WA/Sol-9) (A) **Ap 93**
Performance of Solar Collectors—An Evaluation of Standard Ratings (80-WA/Sol-1) (A) **Ap 92**
Water Hyacinths
Flower Power (BTR) **My 46**
Water Induction
Interim Report on Water Induction Detection Studies (81-JPGC-Pwr-27) (A) **N 113**
Water Injection
Effect of Water Injection for NO_x Reduction with Synthetic Liquid Fuels Containing High Fuel-Bound Nitrogen in a Gas Turbine Combustor (81-GT-51) (A) **Je 108**
Effects of Inlet Conditions and Water Injection on Emissions from a Duel-Fuel Industrial Gas Turbine (81-GT-47) (A) **Je 108**
Water Pumping
Operational Characterization of the Solar-Thermal Power System Near Willard, N.M. (80-WA/Sol-39) (A) **Ap 95**
Water Recovery
Application of Improved Technology to a Preprototype Vapor Compression Distillation (VCD) Water Recovery Subsystem (81-ENAs-10) (A) **S 86**
Development of a Preprototype Thermoelectric Integrated Membrane Evaporation Subsystem for Water Recovery (80-ENAs-46) (A) **Mr 114**
Water Recovery by Catalytic Treatment of Urine Vapor (80-ENAs-16) (A) **Mr 112**
Water Recycling
NASA Technology Brings Recycled Water Closer to Home (BTR) **Je 68**
Water Resources
Heat Pumps in Texas (ES) **F 22**
Water Soluble Chemicals
Mixing and Dilution of Water Soluble Hazardous Chemicals Released in Navigable Rivers (81-FE-17) (A) **S 81**
Water/Steam Receivers
Testing of the U.S. Solar Pilot Plant Receiver (81-Sol-3) (A) **S 80**
Water Supply
Water Policy and Education (EN) **Ap 82**
Water Vapor
A Mixed Gray-Gas Model to Calculate Water Vapor Standard Emissivities (81-HT-63) (A) **O 97**
Water Volume
Dyehouse Energy Consideration for the 1980's (80-Tex-8) (A) **F 123**
Water Wash Frequency
Gas Turbine Performance Deterioration and Water Wash Frequency (81-JPGC-GT-10) (A) **D 95**
Waterflooding
Oil Recovery in the Arctic (ES) **F 23**
Watt, D. Stability Boundary for Pseudo-Random Parametric Excitation of a Linear Oscillator (81-DET-15) (A) **D 88**
Watts, R. Development and Integration of the Infrared Telescope for Spacelab (81-ENAs-16) (A) **S 86**
Wave Forces
The Inertial Pressure Concept (81-Pet-28) (A) **My 91**
Wave Interference
Analytical Modeling of Wave Interference Directional Microphones (80-WA/NC-6) (A) **F 124**
Wave Transmission
Wave Transmission and Energy Dissipation of Structural and Machine Joints (81-DET-17) (A) **D 88**
Waves
The Dynamics of Tension Leg Platforms in Waves (81-Pet-27) (A) **My 90**
Multiple Scattering of Waves in Irregularly Laminated Composites (80-WA/APM-22) (A) **Ja 102**
Wax Injection
NASA Gas Turbine Stator Vane Ring (81-GT-208) (A) **Jl 90**
Weak Singularity
Singularity Consideration in Numerical Solution of Contact Stress Problems (81-Lub-53) (A) **D 99**
Weakly Reactive States
A Theoretical Study of Ignition in the Laminar Mixing Layer (81-HT-20) (A) **O 94**
Weapons
Engineers and Nuclear Weapons (C) **O 50**
Wear
Conference on Wear of Materials Probes Metals, Polymers, Ceramics, and Tool Wear, review (NR) **Je 78**
Effects of Amplitude of Oscillation on the Wear of Dry Bearings Containing PTFE (81-Lub-6) (A) **D 96**
Experimental Investigation of the Effect of System Regidity on Wear and Friction-Induced Vibrations (81-Lub-3) (A) **D 95**
Wear and Friction of Nitrogen Ion Implanted Steel (81-Lub-20) (A) **D 97**
Wear and Operating Cost Reduction of Slurry Pumps by Means of Hydrodynamic Variable Speed Couplings (80-WA/MH-3) (A) **Ap 96**
Wear Prediction for Locomotive Wheels (81-RT-8) (A) **Ag 76**
Wear Particles
Lubrication Mechanism of Solid Lubricants in Oils (81-Lub-50) (A) **D 99**
Toward a Mechanical Wear Equation (81-Lub-5) (A) **D 96**
Weather Satellites
Monsoon's Secrets Under Scrutiny (BTR) **F 52**
Weaver, D. S. The Effect of Approach Flow Direction on the Flow Induced Vibrations of a Triangular Tube Array (81-DET-25) (A) **N 105**; Flow Induced Vibrations of Heat Exchanger U-Tubes, A Simulation to Study the Effects of Asymmetric Stiffness (81-DET-20) (A) **D 89**
Weaver, E. W., Jr. Elections to Fellow Grade **Jl 83**
Weaver, R. L. Multiple Scattering of Waves in Irregularly Laminated Composites (80-WA/APM-22) (A) **Ja 102**
Webb, J. R. In Spite of Human Nature (C) **Ag 43**
Webel, G. The Effects of Bed Friction on Lateral Mixing in Open Channel Flow (81-FE-9) (A) **S 81**
Weber, C. F. Thermal-Hydraulic Differential Sensitivity Theory (80-WA/HT-56) (A) **My 84**
Weber, D. LNG Cogeneration Power Station (80-JPGC/Pwr-11) (A) **F 117**
Weber, E. C. Elections to Fellow Grade **O 93**
Weber, R. C. Wind: A Power Source for Forklift Trucks **Ja 30**
Weber, R. J. NASA Research in Aeropropulsion (81-GT-96) (A) **Je 111**; **D 26**
Webster, W. D., Jr. An Isoparametric Finite Element With Nodal Derivatives (81-APM-1) (A) **S 83**
Wedeven, L. D. The Effects of Artificially-Produced Defects on the Film Thickness Distribution in Sliding EHD Point Contacts (81-Lub-46) (A) **D 98**
Wedge Action
Viscoplastic Lubrication of Asperities (81-Lub-43) (A) **D 99**
Wedges
A Study of Separated Flow Patterns in Front of Buildings and Bodies Facing the Wind with Their Sharp Edge (81-FE-14) (A) **S 81**
Wehage, R. Design Sensitivity Analysis of Planar Mechanism and Machine Dynamics (80-DET-6) (A) **F 119**
Wehage, R. A. Dynamic Analysis of Mechanical Systems with Intermittent Motion (81-DET-48) (A) **N 105**
Wei Yu-bing Experimental Investigation of a Low Hub-to-Tip Ratio Single Stage Transonic Fan (81-GT-209) (A) **Jl 90**

Weidner, R. J. Stochastic Properties of Compartment Models (80-WA/DSC-37) (A) **Mr 117**

Weighted Sum
Evaluation of Coefficients for the Weighted Sum of Gray Gases Model (81-HT-55) (A) **O 97**

Weimer, F. C. Modeling of Nonholonomic Dynamic Systems With Applications (81-APM-12) (A) **S 84**

Weinbaum, S. A Three-Dimensional Air-Vapor-Droplet Local Interaction Model for Spray Units (81-HT-18) (A) **O 94**

Weinman, J. A. 11.5 Micron Emission from Smoke Computed Using Finite Cloud Geometry (80-WA/HT-1) (A) **Ap 103**

Weinstock, H. Analysis of Wheel Rail Force and Flange Force During Steady-State Curving of Rigid Trucks (81-RT-5) (A) **Ag 76**

Weirich, T. L. Effects of Pollutants and Urban Parameters on Atmospheric Temperature (80-WA/HT-4) (A) **Ap 103**

Weis, H. K. Remembering the Holt Tractor (C) **Ag 43**

Weisnetz, B. *(author)* The Design and Building Industry's Awards Directory (CB) **F 128**

Weld Metal
Influence of Service Exposure on Base and Weld Metal of ½ Cr- ½ Mo- ¼ V High-Pressure Steam Inlet Piping (81-PVP-24) (A) **Ag 80**

Welded Joints
A Study on Creep Behavior Evaluation for Welded Joint in High Temperature Structure Design (81-PVP-36) (A) **Ag 82**

Welded Wire
Selecting Welded Wire Assemblies for Strength (BTR) **Ja 56**

Welding
Welding is Crucial (ES) **O 26**

Welding Research
Center for Welding Research (EN) **O 86**

Weldon, W. F. Analysis of Defective Hydrostatic Radial Bearings for 5-MJ Homopolar Generator (80-WA/DE-14) (A) **Ap 101**

Wellbore Flow
Wellbore Flow Characteristics for Optimal Energy Recovery from Gulf Coast Geopressured Geothermal Sources (81-Pet-18) (A) **My 90**

Wells, R. A. Boundary Layer Development on Turbine Airfoil Suction Surfaces (81-GT-204) (A) **Jl 90**

Wells
Application of Systems Analysis Techniques in Optimizing Gas Lift Installations (81-Pet-33) (A) **My 91**
Well Test Analysis for Enhanced Oil Recovery Projects (81-Pet-31) (A) **My 90**

Wen, L. Thermal Storage Requirements for Parabolic Dish Solar Power Plants (80-WA/Sol-21) (A) **Ap 94**

Wen-fwu, L. The Use of Multichannel Radio Telemetering Techniques for Stress and Temperature Measurements in Gas Turbine Rotating Components (81-GT-116) (A) **Je 112**

Wen-hu, Y. The Use of Multichannel Radio Telemetering Techniques for Stress and Temperature Measurements in Gas Turbine Rotating Components (81-GT-116) (A) **Je 112**

Weng, G. J. Self-Consistent Determination of Time-Dependent Behavior of Metals (81-APM-11) (A) **S 84**

Wenglarz, R. A. An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) (A) **Ja 97**; Use of Cascade and Small Turbine Tests to Determine Erosion of Utility Turbines (81-GT-52) (A) **Je 108**

Werne, R. W. Mirror Fusion—Another Path to Fusion Power **Jl 24**

Wessely, M. Comparisons of Surface-Renewal Predictions with Field Data (80-WA/HT-67) (A) **My 85**

We-shung, W. The Use of Multichannel Radio Telemetering Techniques for Stress and Temperature Measurements in Gas Turbine Rotating Components (81-GT-116) (A) **Je 112**

Wessel, R. A. Application of the Integral Method to Two-Dimensional Transient Heat Conduction Problems (80-WA/HT-55) (A) **My 84**

West, B. W. Refractory Construction (C) **D 58**

Westerinen, W. J. Free and Forced Convective Effects on Air-Permeable Insulation Systems (81-HT-47) (A) **O 97**

Westinghouse Turbine Engine
The Westinghouse 501D Combustion Turbine Engine (81-GT-32) (A) **Je 106**

Weston, K. C. Gas Turbine Data Acquisition Using a Microcomputer (81-GT-83) (A) **Je 110**

Westwater, J. W. Steam Condensation on Various Gold Surfaces (81-HT-15) (A) **O 94**

Wet Clay
Freezing Potential Studies in Wet Clay Systems (80-WA/HT-8) (A) **Ap 103**

Wet Lime/Limestone
Considerations in Evaluating Wet and Dry FGD Systems (81-JPGC-Pwr-5) (A) **N 110**

Wet Oxidation
Wet Oxidation as a Waste Treatment in Closed Systems (81-ENAs-22) (A) **O 100**

Wet Processing
Dyehouse Energy Consideration for the 1980's (80-Tex-8) (A) **F 123**

Wet Steam Turbines
Nonequilibrium Streamline Curvature Throughflow Calculations in Wet Steam Turbines (81-Gr/GT-3) (A) **O 101**

Wetlands
Wetlands May Clean Geothermal Water (BTR) **Jl 50**

Wheel-Driven Vehicles
Quest for Land Speed Record (BTR) **My 44**

Wheel Flats
An Investigation of Impact Loads Due to Wheel Flats and Rail Joints (80-WA/RT-1) (A) **F 125**

Wheel Load Changes
Wear Prediction for Locomotive Wheels (81-RT-8) (A) **Ag 76**

Wheel Load Criteria
Evaluation of Time-Duration Dependent Wheel Load Criteria for Wheelclimb Derailment (80-WA/DSC-21) (A) **Mr 116**

Wheel Rail Contact
Laboratory Investigation of Wheel Rail Contact Stresses for U.S. Freight Cars (80-WA/RT-8) (A) **F 126**

Wheel Rail Force
Analysis of Wheel Rail Force and Flange Force During Steady-State Curving of Rigid Trucks (81-RT-5) (A) **Ag 76**

Wheel-Rail Relationship
Considerations on the Use of Radially Steered Wheelsets in Railway Trucks (80-WA/RT-10) (A) **F 126**

Wheelclimb Derailment
Evaluation of Time-Duration Dependent Wheel Load Criteria for Wheelclimb Derailment (80-WA/DSC-21) (A) **Mr 116**

Wheeler, L. Crack Path Prediction for a Kinked Crack in the Neighborhood of a Circular Inclusion in an Infinite Medium (81-APM-31) (A) **S 85**

Wheels
Analysis of Cyclic Thermal and Residual Stresses in CH36 Wheels Under Series of Severe Drag Braking (81-RT-10) (A) **Ag 76**
The Role of Wheel-Work Deflection in Grinding Operations (80-WA/Prod-11) (A) **My 82**

Wheelsets
Parametric Excitation of Rail Vehicle Wheelsets Due to Track Irregularity (80-WA/DSC-20) (A) **Mr 116**

Wheeltread Profiles
The Development of An Optimum Wheel Profile for Self-Steering Trucks Under Heavy Axle Load Conditions (80-WA/RT-5) (A) **F 125**

Whetstones
"How-To" of Whetstone Longevity (BTR) **Mr 73**

Whipple, J. C. U.S. Large Leak Sodium-Water Reaction Test Program (80-WA/NE-3) (A) **Ja 96**

Whipstock
Technical Considerations in Drainhole Drilling (81-Pet-14) (A) **My 90**

Whirlwind
Project Whirlwind: The History of a Pioneer Computer (CB) **Ag 84**

Whiskers
Catalyst "Whiskers" (ES) **Ja 21**

White, A. J. The Prediction of the Flow and Heat Transfer in the Vicinity of a Jet in Crossflow (80-WA/HT-26) (A) **Ap 105**

White, D. H. Flow Model Test For the Investigation of Feedwater Line Cracking for PWR Steam Generators (81-PVP-4) (A) **Ag 79**

White, D. J. Low NO_x Combustion Systems for Burning Heavy Residual Fuels and High-Fuel-Bound Nitrogen Fuels (81-GT-109) (A) **Je 113**

White, E. N. *(author)* Maintenance Planning, Control and Documentation, 2nd Ed. (CB) **My 92**

White, R. A. Some Anomalies in the Boundary Layer and Friction Drag Characteristics of Streamwise Corrugated Walls at Transonic and Supersonic Freestream Velocities (81-FE-37) (A) **S 83**

White Pine Trees
'Soundprints' of Materials (BTR) **Ap 62**

Whitelaw, J. H. The Influence of Swirl on the Flow Characteristics of a Reciprocating Piston-Cylinder Assembly (80-WA/FE-8) (A) **My 86**; A Round Jet Normal to a Cross-Flow (80-WA/FE-10) (A) **My 86**

Whitfield, A. The Effect of Impeller Tip Design on the Performance of a Mixed Flow Turbocharger Compressor (81-GT-7) (A) **Je 104**

Whitney, A. K. Vibrations of Long Marine Pipes Due to Vortex Shedding (81-Pet-29) (A) **My 91**

Whittaker, A. R. Mathematical Modelling for Predicting Effects of Structural Changes in Machine Tools (81-DET-39) (A) **O 104**

Wide Band Absorption
Scattering Band Absorption for a Planar Medium (81-HT-61) (A) **O 98**

Wiederrich, J. L. Analysis of Drive Shaft Speed Variations in a Scotch Yoke Mechanism (80-DET-92) (A) **Mr 109**; Design and Evaluation of Drag-Link Driven Cams (80-DET-38) (A) **F 121**; Residual Vibration Criteria Applied to Multiple Degree of Freedom Cam Followers (80-DET-3) (A) **F 118**

Wieting, A. R. Computation of Radiation View Factors for Surfaces with Obstructed Views of Each Other (81-HT-57) (A) **O 98**

Wilbeck, J. S. The Development of a Substitute Bird Model (81-GT-23) (A) **Je 106**

Wilby, J. F. Analytical Prediction of Aerospace Vehicle Vibration Environments (81-DET-29) (A) **O 103**

Wilde, R. C. EVA Equipment for Satellite Service (80-ENAs-48) (A) **Mr 114**; **Je 40**

Wildheim, S. J. Natural Frequencies of Rotating Bladed Discs Using Clamped-Free Blade Modes (81-DET-124) (A) **N 108**

Wilkening, H. A., Jr. AA1 Corporation Receiver Design Experience in Concentrating Solar Collectors (81-Sol-1) (A) **S 80**

Wilkins, G. A. An Electro-Optical Array Support Cable (80-WA/OCE-8) (A) **Ap 97**

Wilkowski, G. M. A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part II: Experimental Verification on a Type 304 Stainless Steel Pipe (80-WA/PVP-4) (A) **Ja 98**

Williams, B. A. Evaluation of Biological Models Using Spacelab (80-ENAs-38) (A) **Mr 113**; Life Sciences Experiments for Dedicated Spacelab Missions (80-ENAs-37) (A) **Mr 113**; NASA-AMES Life Sciences Flight Experiments Program—1980 Status Report (80-ENAs-34) (A) **Mr 113**

Williams, D. E. Progress in the Development of the Marine Spey, SM1A (81-GT-186) (A) **Jl 89**

Williams, L. J. The Use of Mathematical Modeling in the Analysis of Gas Turbine Compressor Unit Test Data (81-GT-217) (A) **Jl 91**

Williams, M. L. Gas Turbine Materials Evaluation Program Utilizing Coal Derived Gaseous Fuel (81-GT-65) (A) **Je 109**

Williams, S. J. Development of an Instrumented Marine Riser Joint (81-Pet-25) (A) **My 90**

Willis, R. J., Jr. On the Kinematics of the Closed Epicyclic Differential Gears (81-DET-111) (A) **N 107**

Willmert, K. D. Finite Element Quasi-Static Deformation Analysis of Planar Mechanisms with External Loads Using Static Condensation (81-DET-104) (A) **N 107**; New Finite Elements for Quasi-Static Deformations and Stresses in Mechanisms (80-WA/DSC-35) (A) **Mr 117**

Willmott, J. A. *(author)* Thermal Energy Storage and Regeneration (CB) **Ag 85**

Wills, J. G. *(author)* Lubrication Fundamentals (CB) **O 106**; **N 116**

Wilson, D. G. Design Analysis of High-Efficiency Low-Stress Ceramic Gas Turbines (81-GT-130) (A) **Jl 84**

Wilson, J. F. Galileo Probe Forebody Entry Thermal Protection: Aerothermal Environments and Heat Shielding Requirements (80-ENAs-24) (A) **Mr 112**
Wilson, R. J. Turbulent Pressure-Velocity Measurements in a Fully Developed Concentric Annular Air Flow (81-DET-23) (A) **D 89**
Wilson, V. E. Design Analysis of High Temperature Transparent Windshields for High Performance Aircraft (81-ENAs-5) (A) **S 85**
Wilson, W. R. D. MAPS-1: Computer-Aided Design System for Preliminary Material and Manufacturing Process Selection (80-DET-51) (A) **Mr 106**; Use of Figures of Merit in Computer-Aided Material and Manufacturing Process Selection (81-DET-103) (A) **N 107**; Viscoplastic Lubrication of Asperities (81-DET-43) (A) **D 99**

Winches
Long Coring Facility Winch and Cable System (80-WA/OCE-9) (A) **Ap 98**
Winch Design—Good or Bad (80-WA/DE-11) (A) **Ap 98**

Wind Effects
Small-Scale Observations of Wind Effects Penetration in the Open Sea (80-WA/HT-66) (A) **My 85**

Wind Engineering
Wind Engineering: Proceedings of the 5th International Conference on Wind Engineering (CB) **D 102**

Wind Farm
'Wind Farm' Producing Electric Power (BTR) **My 48**

Wind Generators
Wind Power Economics (C) **Mr 67**

Wind Machines
Offshore Wind Economics (C) **My 43**

Wind Speeds
Comparisons of Surface Renewal Predictions with Field Data (80-WA/HT-67) (A) **My 85**

Wind Tunnel Study
A Study of Separated Flow Patterns in Front of Buildings and Bodies Facing the Wind with Their Sharp Edge (81-FE-14) (A) **S 81**

Wind Tunnels
Development of a Large-Scale Wind Tunnel for the Simulation of Turbomachinery Airfoil Boundary Layers (81-GT-6) (A) **Je 104**
On Wind-Tunnel Simulation of Desert Atmospheric Conditions for Sand Dune Studies (81-FE-8) (A) **Ag 83**
Wind Engineering: Proceedings of the 5th International Conference on Wind Engineering (CB) **D 102**

Wind Turbines
Torque Ripple in a Darrieus, Vertical Axis Wind Turbine (80-WA/Sol-13) (A) **Ap 93**
VAWTDYN—A Numerical Package for the Dynamic Analysis of Vertical Axis Wind Turbines (80-WA/Sol-18) (A) **Ap 94**
A Windmill at Montauk (ES) **F 22**

Winding Tension
Resolution of a Core Problem in Wound Rolls (80-WA/APM-23) (A) **Ja 102**

Windmills
Wind: A Power Source for Forklift Trucks **Ja 30**
Windmill Farm (ES) **Ap 28**
A Windmill at Montauk (ES) **F 22**

Window Mechanisms
Type and Dimensional Synthesis of Casement Window Mechanisms (80-DET-78) (A) **Mr 108**

Windows
A $16 Billion Market (ES) **Ap 29**

Windpower
Making Windpower an Important Part of a National Energy Plan (81-Pet-11) (A) **My 89**
Smooth Sailing (IF) **Mr 77**
Wind Power Economics (C) **Mr 67**

Winegartner, E. C. Coal Ash Fouling Test in a Laboratory Furnace (81-JPGC-Fu-8) (A) **D 93**

Winer, W. O. Regimes of Traction in Concentrated Contact Lubrication (81-Lub-16) (A) **D 96**; Some Observations in High Pressure Rheology of Lubricants (81-Lub-17) (A) **D 96**

Winkler, H. E. Development of a Preprototype Thermoelectric Integrated Membrane Evaporation Subsystem for Water Recovery (80-ENAs-46) (A) **Mr 114**

Winnick, J. CO_2 Concentrations in a Molten Carbonate Electrochemical Cell (80-ENAs-14) (A) **Mr 111**

Wire Cable
Gentle Arrester (BTR) **Jl 57**

Wire Ropes
Load-Sensing Device (BTR) **My 49**
Selecting Domestic Wire Ropes for Metric Applications (BTR) **N 73**

Wireforms
Selecting Welded Wire Assemblies for Strength (BTR) **Ja 56**

Wissler, E. H. Graduate-School Incentives Costly (C) **S 49**

Witherell, P. G. Noise Due to Resonant Excitation of a Rotating Cylinder (81-DET-98) (A) **N 106**

Withers, B. F. Anti-Exposure Suits in the VP Community (80-ENAs-43) (A) **Mr 113**

Witten, A. J. Application of Zone-Matching Methodology to Interacting Submerged Multiport Diffusers (81-FE-12) (A) **Ag 83**

Woelfel, A. E. Elections to Fellow Grade **Mr 103**

Woelk, G. U. Design of Turbo Machine Set for Fluid Catalytic Cracking Plant and its Shop-Testing Under Full-Load Conditions (81-GT-101) (A) **Je 112**

Wojcik, C. K. Synthesis of the Four-Bar Function Generator: A Novel Approach (80-DET-26) (A) **F 119**

Wolfbrandt, G. Effect of Fuel Nitrogen and Hydrogen Content on Emissions in Hydrocarbon Combustion (81-GT-63) (A) **Je 109**

Wolff, W. J. On-Site Quality Control of Insolation Measurements (80-WA/Sol-25) (A) **Ap 94**

Wolfs, J. Investigation of Vibration of Shrouded Turbine Blades (81-DET-129) (A) **N 108**

Wolgemuth, G. A. Hydraulically Expanded Tube to Tubesheet Joints (81-PVP-35) (A) **Ag 82**

Wolock, I. Fracture Criteria of Fibrous Laminated Composites Under In-Plane Multidirectional Loading (80-WA/APM-9) (A) **Ja 100**

Wolosin, S. A Corrosion-Erosion Test Rig for High-Temperature Turbine Materials Evaluation (81-GT-198) (A) **Jl 89**

Wolters, M. J. Process Design Conditions for Boiler Blowdown System (81-PVP-37) (A) **Ag 82**

Womeldorff, P. J. KILnGAS Coal Gasification: An Idea Whose Time Has Come (81-JPGC-Fu-5) (A) **D 94**

Women Engineers
The Outdated "Professional Man" (C) **Ag 43**
Registry of Women Engineers (NB) **Mr 81**
SWE Plans '82 National Convention (NB) **N 91**
Woman Engineer Designs Manhole Cover (BTR) **Jl 54**

Women's Income
You've Come Long Way Baby . . . (NB) **Jl 80**

Wong, C. P. C. Closed-Cycle Gas Turbine Applications for Fusion Reactors (81-GT-17) (A) **Je 105**

Wong, F. The Performance of Portable Evacuation Compressors in Gas Transmission Service (81-GT-140) (A) **Jl 85**

Wong, F. W. Ion-Exchange Chromatography Separation Applied to Mineral Recycle in Closed Systems (81-ENAs-21) (A) **O 100**

Wong, H. Predictions of Drop Models for the Dispersed Flow Downstream of the Quench Front in Tube Reflood Experiments (80-WA/HT-47) (A) **Ap 106**

Wong, J. C. Finite Element Stress Analysis of Planar Elastic Systems Having Press Fitted Units (80-DET-98) (A) **Mr 109**

Wong, S. Low Reynolds Number Forced Convection Steam Cooling Heat Transfer in Rod Bundles (80-WA/HT-59) (A) **My 84**

Wonn, J. W. Interim Report on Water Induction Detection Studies (81-JPGC-Pwr-27) (A) **N 113**

Wood, B. D. Design and Evaluation of a Computer Controlled Solar Collector Simulator (80-WA/Sol-6) (A) **Ap 92**

Wood, E. J. Drilling and Completing Multiple Branched Boreholes for In Situ Leach Mining (81-Pet-2) (A) **My 88**

Wood, G. R. The Ruston Tornado—A 6-MW Gas Turbine for Industrial Application (81-GT-171) (A) **Jl 87**

Wood, L. Design Analysis of High-Efficiency Low-Stress Ceramic Gas Turbines (81-GT-130) (A) **Jl 84**

Wood, P. C. The Preparation of Calcium Superoxide in a Flowing Gas Stream and Fluidized Bed (80-ENAs-18) (A) **Mr 111**

Wood Alcohol
Novel Fuel Cell (IF) **N 83**

Wood Fuel
An Economic Comparison of Wood and Fossil Fuel Processing Systems (80-WA/Ener-1) (A) **Ap 95**

Woodburn, J. D. Elections to Fellow Grade **Ap 80**

Woodhouse, G. D. ITI GT601—A New Approach to Vehicular Gas Turbine Power Unit Design (81-GT-152) (A) **Jl 86**

Woodruff, D. W. Steam Condensation on Various Gold Surfaces (81-HT-15) (A) **O 94**

Woomer, E. The Balancing of Rotating Shafts by Quadratic Programming (80-DET-45) (A) **F 121**

Work Environment
Working With People: Human Resource Management in Action (CB) **Ap 108**

Work Principles
'Tried and True' Work Principles Still Apply (NR) **Ap 75**

Work Stations
Modular Factory System for Greater Productivity (BTR) **Je 68**

Workshops
The Engineer as Information Manager (C) **F 46**
Space: The Next 25 Years (BTR) **F 50**

Workspaces
Design Considerations for Manipulator Workspace (81-DET-79) (A) **D 90**
The Dextrous Workspace (80-DET-108) (A) **Mr 110**
The Workspaces of a Mechanical Manipulator (80-DET-107) (A) **Mr 110**

World Needs
Shortage of Engineers Tied to World Needs (EN) **Jl 74**

World Steel
World Steel Industry Outlook (IF) **My 54**

World's Fair
"Energy": Theme of '82 World's Fair (NB) **O 77**

Wound Rolls
Resolution of a Core Problem in Wound Rolls (80-WA/APM-23) (A) **Ja 102**

Wound Traction Motor
"Super Series" Wheel Creep Control System (80-WA/RT-3) (A) **F 125**

Woven Fabrics
Tensile Properties of Triaxially Woven Fabrics Under Biaxial Loading (80-Tex-3) (A) **F 122**

Woytowich, R. T. Effects of Centerplate Friction on Truck Yaw Hunting and Carbody Lateral Stability (81-RT-9) (A) **Ag 76**

Wright, C. Zwiep Lauded (C) **F 47**

Wright, P. K. Flexible Manufacturing Systems, Metal Cutting and Material Conservation (80-WA/Prod-6) (A) **My 82**

Writing
Technically—Write! (CB) **N 116**

Wrongness
On Determining Right and Wrong (C) **O 51**

Wu, B. J. C. A Nonequilibrium Vapor Generation Model for Flashing Flows (81-HT-84) (A) **O 99**

Wu, C. L. Signature Analysis Applied to Drilling (81-DET-9) (A) **D 88**

Wu, K. H. Analysis of Externally Pressurized, Double-Pad, Gas Porous Thrust Bearing (81-Lub-25) (A) **D 98**

Wu, S. F. Conceptual Design of an Advanced Water/Steam Receiver for a Solar Thermal Central Power System (81-Sol-5) (A) **S 80**

Wu, S. M. Explicit Identification of Machine Tool Structure and Cutting Process Using Bivariate Time Series Models (80-WA/Prod-27) (A) **My 84**; On-Line Hole Quality Evaluation for Drilling Composite Material Using Dynamic Data (80-WA/Prod-16) (A) **My 83**

Wu, Y. C. L. MHD Steam Power—Promise, Progress, and Problems **S 30**

Wu Wen-quan Application of Basic Aerothermodynamic Equations Governing Three-Dimensional Flow in Turbomachinery and Identification of Type of Equation (81-GT-142) (A) **Jl 84**

Wyatt, J. R. Atmospheric Monitoring in Submersibles (80-ENAs-31) (A) **Mr 113**

Wydeven, T. Ion-Exchange Chromatography Separation Applied to Mineral Recycle in Closed

Systems (81-ENAs-21) (A) O 100; The Preparation of Calcium Superoxide in a Flowing Gas Stream and Fluidized Bed (80-ENAs-18) (A) Mr 111; Wet Oxidation as a Waste Treatment in Closed Systems (81-ENAs-22) (A) O 100

Wyler, J. S. Design and Testing of a New Double Labyrinth Seal (81-Lub-58) (A) D 99

Wynnyckyj, J. R. A Furnace Wall Ash Monitoring System for Coal Fired Boilers (80-WA/Fu-1) (A) F 127

X

Xiang-yi, L. Application of Scaling in Afterburner Test and Development (81-GT-194) (A) JI 89

Xingsu, L. Aerodynamic Design and Experimental Study of Marine Gas Turbine Exhaust Volutes (81-GT-143) (A) JI 84

Xistris, G. D. Dynamic Behavior of a Moving Belt Supported on Elastic Foundation (80-DET-55) (A) Mr 108

Y

Yacobucci, H. G. Design and Preliminary Results of a Fuel Flexible Industrial Gas Turbine Combustor (81-GT-108) (A) Je 113; Low NO_x Combustion Systems for Burning Heavy Residual Fuels and High-Fuel-Bound Nitrogen Fuels (81-GT-109) (A) Je 113

Yagoda, H. P. Resolution of a Core Problem in Wound Rolls (80-WA/APM-23) (A) Ja 102

Yamada, T. Numerical Simulation of Mesoscale Atmospheric Circulations Over Lake Michigan (80-WA/HT-65) (A) My 85; Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part 1: Plain Milling with a Single-Toothed Helical Cutter (80-WA/Prod-4) (A) My 82; Part 2: Plain Milling with a Multitoothed Helical Cutter (80-WA/Prod-5) (A) My 82

Yamaguchi, K. A Method to Measure Contact Pressure Between Metallic Surfaces by Changes in Surfaces Roughness (80-WA/Prod-18) (A) My 83; Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part 1: Plain Milling with a Single-Toothed Helical Cutter (80-WA/Prod-4) (A) My 82; Part 2: Plain Milling with a Multitoothed Helical Cutter (80-WA/Prod-5) (A) My 82

Yamaguchi, N. Factors Affecting Blade Ash-Erosion in Axial Induced Draft Fans (81-JPGC-Pwr-7) (A) F 116

Yamamoto, H. Smoke Filling in an Enclosure (81-HT-8) (A) S 89

Yambor, S. P. Design and Operating Aspects of Campbell Plant Circulating Water System (80-JPGC/Pwr-17) (A) F 117

Yan, H. S. Linkage Characteristic Polynomials: Assembly Theorems, Uniqueness (80-DET-9) (A) F 118; Linkage Characteristic Polynomials: Definitions, Coefficients by Inspection (80-DET-8) (A) Mr 108

Yang, A. T. On the Principle of Transference in Three-Dimensional Kinematics (80-DET-88) (A) Mr 109; Stress Fluctuation on High Speed Mechanisms (80-DET-21) (A) F 119

Yang, Q. S. Radiative Heat Transfer in Fibrous Insulations—Part II: Experimental Study (81-HT-43) (A) O 97

Yannopoulos, L. N. High Temperature Removal of Alkali and Particulates in Pressurized Gasification Systems (81-GT-67) (A) Je 109

Yao, L. S. Buoyancy Effects on a Boundary Layer Along an Infinite Vertical Cylinder with a Step Change of Surface Temperature (80-WA/HT-25) (A) Ap 104; Heat Transfer of Fully Developed Flow in Curved Tubes (81-HT-39) (A) O 96

Yao, S. Numerical Study of Turbulent Droplet Flow Heat Transfer (80-WA/HT-48) (A) Ap 106

Yao, S. C. Heat Transfer Augmentation in Rod Bundles Near Grid Spacers (80-WA/HT-62) (A) My 84

Yard Testing
A Yard Test of Acoustic Signature Inspection of Railroad Wheels (80-WA/RT-2) (A) F 125

Yarden, A. L. Improvement in Performance and Availability of Currently Operating MSR's (80-JPGC-Pwr-12) (A) F 117

Yasu, S. Supercavitating Cavity Observations by Means of Laser Velocimeter (80-WA/FE-5) (A) My 85

Yates, C. C. Gas Turbine Materials Evaluation Program Utilizing Coal Derived Gaseous Fuel (81-GT-65) (A) Je 109

Yawed Cylinders
Statistical Properties of the Surface Pressure Distribution on a Yawed Cylinder in a Turbulent Flow Field (81-DET-35) (A) O 103

Yearbooks
McGraw-Hill Yearbook of Science and Technology—1980 (CB) Mr 119

Yeh, Y. G. A Model for the Analysis of Air Heater Vibrations (81-DET-34) (A) O 103

Yellot, J. I. Editor, Retiring (C) N 73

Yen, C. F. A Theory of Multiaxial Anisotropic Viscoplasticity (81-APM-21) (A) S 85

Yen, C. L. Nonlinear Response of an Elastic Cylindrical Shell to a Transient Acoustic Wave (81-APM-10) (A) S 84

Yeoh, C. C. Nonequilibrium Streamline Curvature Throughflow Calculations in Wet Steam Turbines (81-Gr/GT-3) (A) O 101

Yeung, H. C. The Effect of Approach Flow Direction on the Flow Induced Vibrations of a Triangular Tube Array (81-DET-25) (A) N 105

Yianneskis, M. The Influence of Swirl on the Flow Characteristics of a Reciprocating Piston-Cylinder Assembly (80-WA/FE-8) (A) My 86

Ying, S. P. Pulsation of High Pressure Turbine (80-JPGC/Pwr-14) (A) F 117

Ying, Z. An Aerothermodynamic Analysis of Transonic Compressor Rotors Containing Three-Dimensional Shocks (81-GT-120) (A) Je 114

Yi-zhen, W. Some Factors Affecting Altitude Relighting Performance of Turbojet Engine Combustor (81-GT-49) (A) Je 108

Yokoyama, M. Optimization Analysis of Automated Assembly Systems (80-WA/Prod-20) (A) My 83

Yoneya, T. The Dynamics of Tension Leg Platforms in Waves (81-Pet-27) (A) My 90

York, D. R. Characterization of Dust and Emissions from a Taconite Bulk Handling Facility (80-WA/APC-2) (A) Ap 102

Yoshida, K. The Dynamics of Tension Leg Platforms in Waves (81-Pet-27) (A) My 90

Yoshida, T. The Influence of a Laminar Boundary Layer and Laminar Injection on Film Cooling Performance (81-HT-38) (A) O 96

Yoshikawa, H. Lubrication Mechanism of Solid Lubricants in Oils (81-Lub-50) (A) D 99

Younes, Y. K. A Rapid Determination of Journal Bearing Characteristics Under Combined Loading (80-DET-62) (A) Mr 107

Young, F. M. Mechanically Bonded Radiators for Locomotive Reliability (80-WA/RT-4) (A) F 125

Young, G. E. An Approach to the Preliminary Evaluation of Closed-Ecology Life Support System (CELSS) Scenarios and Control Strategies (81-ENAs-38) (A) O 101

Young, J. B. Nonequilibrium Streamline Curvature Throughflow Calculations in Wet Steam Turbines (81-Gr/GT-3) (A) O 101

Young, L. A. Experimental Evaluation of a Mixed Friction Hydrostatic Mechanical Face Seal Model Considering Radial Taper, Thermal Taper, and Wear (81-Lub-38) (A) D 98

Young, S.-S. D. The Sensitivity Analysis of Cam Mechanism Dynamics (80-DET-93) (A) Mr 109

Young Scientists
Lower Expectations Found in Today's Ph.D. Group (EN) O 84

Yousef, W. W. Secondary Flow Structure in Combined Free and Forced Convection in a Horizontal Isothermal Tube (81-HT-36) (A) O 96

Yu, A. T. Bulk Handling—Advances in Mining, Transportation and Processing (80-WA/MH-9) (A) Ap 96

Yu, B. K. Vibrations of Long Marine Pipes Due to Vortex Shedding (81-Pet-29) (A) My 91

Yu, C. P. Heat Transfer in Developing MHD Channel Flows in an Inclined Magnetic Field (80-WA/HT-12) (A) Ap 104

Yuan-ying, S. Effect of Casing Treatment on Performance of a Three-Stage L.P. Compressor (81-GT-159) (A) JI 86

Yuceoglu, U. Delamination of Layered Cylindrical Shells Under Internal Pressure (80-WA/PVP-7) (A) Ja 98

Yuen, W. W. Application of the Integral Method to Two-Dimensional Transient Heat Conduction Problems (80-WA/HT-55) (A) My 84; A Simplified Approach to the Evaluation of the Geometric-Mean Transmittance and Absorptance for Gas Enclosures (81-HT-62) (A) O 99

Yukawa, S. Elections to Fellow Grade Mr 104

Yunis, M. A Generalized Mathematical Model to Estimate Gas Turbine Starting Characteristics (81-GT-202) (A) JI 90

Z

Zahoor, A. A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part I: J-Integral Analysis (80-WA/PVP-3) (A) Ja 96; Part II: Experimental Verification on a Type 304 Stainless Steel Pipe (80-WA/PVP-4) (A) Ja 96

Zaizen, T. Embrittlement of 1 1/4 Cr-1/2 Mo Steels in High-Temperature Service (81-Mat-3) (A) O 102

Zalesak, P. F. Optimizing the Performance of the P-3C Environmental Control System (80-ENAs-6) (A) Mr 111

Zarotti, G. L. Decision Making Support in the Assessment of Modular Radiator Systems (80-ENAs-11) (A) Mr 111; On Pallet Mounted Deployable Radiator Systems (81-ENAs-29) (A) S 88

Zatko, P. T., Jr. Emergency Response Facilities for Davis-Besse Nuclear Power Station (81-JPGC-NE-13) (A) N 110

Zeno, J. Gemini T-20G-8 XM1 Tank APU (81-GT-81) (A) Je 110

Zetlmeisl, M. J. An Investigation of the Relationship between Partial Pressure of SO_3 and the Corrosion Potential of In 738 in Na_2SO_4 Melts at 900°C (80-WA/CD-3) (A) Ja 97

Zhang Guei-xiang Experimental Investigation of a Low Hub-to-Tip Ratio Single-Stage Transonic Fan (81-GT-209) (A) JI 90

Zhao Shi Chen Effect of Blade Stagger Angle on Performance of a Transonic Compressor with Low Hub-Tip Ratio (81-GT-177) (A) JI 88

Zhao-xiang, H. Some Factors Affecting Altitude Relighting Performance of Turbojet Engine Combustor (81-GT-49) (A) Je 108

Zhou, S. Similarity Law of Transonic Flow Fields Around Cascades (81-GT-36) (A) Je 107

Zhuan-she, D. An Aerothermodynamic Analysis of Transonic Compressor Rotors Containing Three-Dimensional Shocks (81-GT-120) (A) Je 114

Ziebarth, H. Early Detection of Cross-Sectional Rotor Cracks by Turbine Shaft Vibration Monitoring Techniques (81-JPGC-Pwr-26) (A) N 112

Zierke, W. C. Measurement and Analysis of Total-Pressure Unsteadiness Data from a Axial-Flow Compressor Stage (81-Gr/GT-2) (A) O 102

Zimmer, P. A. KILnGAS Coal Gasification: An Idea Whose Time Has Come (81-JPGC-Fu-5) (A) D 94

Zinc
Hot Dip for a Silent Killer (BTR) O 81

Zinsmeister, G. E. Putting Engineering Education to Work O 28

Zlokolica, M. Z. Dynamic Analysis of Variators with Half Ball and Two Discs as Non-Holonomic Systems (80-DET-95) (A) Mr 109

Zollinger, E. Optimization of the HHT-1640 MW(th) Demonstration Nuclear Power Plant (HHT-Project) (81-GT-13) (A) **Je 105**

Zollinger, H. A. Conveyor Systems and Innovations (80-WA/MH-16) (A) **Ap 97**

Zollinger, H. J. Aerodynamic Design and Testing of an Improved First-Stage Compressor Rotor for a Heavy-Duty Gas Turbine (81-GT-135) (A) **JI 85**

Zone-Matching Methodology

Application of Zone-Matching Methodology to Interacting Submerged Multiport Diffusers (81-FE-12) (A) **Ag 83**

Zone Method

Correlation Between Results of Zone Method and Experiment in Radiative Heat Transfer (81-HT-71) (A) **O 98**

Zudans, Z. Elections to Fellow Grade **Mr 104**

Zumrick, J. Assessment of Thermal Protection Afforded by Hot Water Diving Suits (80-WA/OCE-4) (A) **Mr 117**

Zunino, P. Correction for Streamline Curvature and Coriolis Force in a Boundary Layer Integral Method (81-GT-97) (A) **Je 111**

Zuomin, W. Aerodynamic Design and Experimental Study of Marine Gas Turbine Exhaust Volutes (81-GT-143) (A) **JI 84**

Zuo-ren, J. An Aerothermodynamic Analysis of Transonic Compressor Rotors Containing Three-Dimensional Shocks (81-GT-120) (A) **Je 114**

Zwiep, D. N. Editor, Retiring (C) **N 72**

Index to
TRANSACTIONS OF THE ASME

Volume 103, 1981
(Published Quarterly in Thirteen Journals)

A

Abbott, C. L. Development of an Electrofluidic Rate Sensor **DS 303**

Abbott, D. R. Advances in Labyrinth Seal Aeroelastic Instability Prediction and Prevention (80-GT-151) **P 308**

Abe, Y. An Investigation Into the Performance of Two Inlet Nozzles for Flow Measurement **F 67**; (D) (AC) **F 73**

Abeyaratne, R. Finite Elastic-Plastic Deformation of a Rotating Hollow Cylinder (BN) **AM 666**

Aboudi, J. Arrest of Mode III Fast Fracture by a Transition From Elastic to Viscoplastic Material Properties **AM 509**

Abrasive Coatings

Application of Abrasive Coatings to Clearance Control in the Gas Turbine (D) **P 602**; (AC) **P 603**

Abrasive Disks

Optimum Design of an Abrasive Disk **MD 818**

Abrasive Wear

Abrasive Wear in Machining: Experiments With Materials of Controlled Microstructure **MT 151**

Absorber Plates

Temperature Variation in the Absorber Plate of an Air Heating Flat Plate Solar Collector (80-WA/Sol-2) **SE 153**

Absorbers

Analysis and Design of Efficient Absorbers for Low-Temperature Desiccant Air Conditioners **SE 67**

Analytical Predictions of Liquid and Air Photovoltaic/Thermal, Flat-Plate Collector Performance **SE 291**

A Dynamic Absorber for Gear Systems Operating in Resonance and Instability Regions (80-C2/DET-7) **MD 364**

High-Flux Solar Absorber Concept for Central Receiver Power Plants **SE 52**

Optimum Vibration Absorbers for Linear Damped Systems **MD 908**

Absorptance

A Simplified Approach to the Evaluation of the Geometric-Mean Transmittance and Absorptance for Gas Enclosures **HT 808**

Absorption

Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: *P* and *SV* Motion (81-APM-18) **AM 155**

Accelerating Reference Frames

Dynamics of Mechanisms and Machine Systems in Accelerating Reference Frames **DS 395**

Acceleration

Acceleration of Unbalanced Rotor Through the Resonance of Supporting Structure (81-APM-24) **AM 419**

Heat Transfer in the Accelerated Fully Rough Turbulent Boundary Layer **HT 153**

Influence of Acceleration on the Critical Speed of a Jeffcott Rotor (80-GT-88) **P 108**

Optimum Vehicle Suspensions Minimizing RMS Rattlespace, Sprung-Mass Acceleration and Jerk (81-WA/DSC-23) **DS 229**

Accessible Region

Accessible Region and Synthesis of Robot Arms (80-DET-101) **MD 803**

Acharya, S. Laminar Mixed Convection in a Shrouded Fin Array **HT 559**

Achenbach, J. D. Arrest of Mode III Fast Fracture by a Transition From Elastic to Viscoplastic Material Properties **AM 509**; Elastodynamic Stress-

Code	Journal of	Published	Pages
AM	Applied Mechanics	March	1-216
		June	217-256
		September	257-688
		December	689-992
BE	Biomechanical Engineering	February	1-60
		May	61-128
		August	129-220
		November	221-300
DS	Dynamic Systems, Measurement, and Control	March	1-74
		June	75-166
		September	167-298
		December	299-424
ERT	Energy Resources Technology	March	1-108
		June	109-188
		September	189-260
		December	261-356
F	Fluids Engineering	March	1-182
		June	183-378
		September	379-486
		December	487-646
HT	Heat Transfer	February	1-188
		May	189-408
		August	409-608
		November	609-826
I	Engineering for Industry	February	1-136
		May	137-256
		August	257-354
		November	355-484
L	Lubrication Technology	January	1-168
		April	169-322
		July	323-472
		October	473-602
MD	Mechanical Design	January	1-256
		April	257-548
		July	549-672
		October	673-924
MT	Materials Technology	January	1-80
		April	81-186
		July	187-266
		October	267-348
P	Engineering for Power	January	1-256
		April	257-480
		July	481-604
		October	605-810
PVT	Pressure Vessel Technology	February	1-128
		May	129-212
		August	213-300
		November	301-388
SE	Solar Energy Engineering	February	1-80
		May	81-180
		August	181-284
		November	285-366

(AC)	Author's Closure	(CR)	Conference Report	(Er)	Erratum
(Ad)	Addendum	(D)	Discussion	(F)	Forum
(BN)	Brief Note	(DDM)	Design Data and Methods	(op)	Opinion
(BR)	Book Review	(EB)	Educational Brief	(TB)	Technical Brief
(C)	Comment	(Ed)	Editorial		

Intensity Factors for a Crack Near a Free Surface **AM 539**
Acosta, A. Viscous Effects in the Inception of Cavitation **F 280**
Acoustic Emission
Acoustic Emission Monitoring During Rupture Test of Pressure Vessel and Laboratory Fracture Test- **PVP 191**
Propagation of Elastic Pulses and Acoustic Emission in a Plate Part 1: Theory (81-APM-4) **AM 125**; Part 2: Epicentral Responses (81-APM-5) **AM 133**; Part 3: General Responses (81-APM-6) **AM 139**
Quantitative Relationships for Acoustic Emission from Orthogonal Metal Cutting **I 330**
Acoustical Properties
Locally and Nonlocally Reacting Flexible Porous Layers; A Comparison of Acoustical Properties (80-WA/NC-14) **I 302**
Acoustics
Acoustic Loading Effects on Oscillating Rod Bundles (80-C2/PVP-124) **PVT 322**
On the Acoustical Implications of Vortex Shedding from an Exhaust Pipe (80-WA/NC-16) **I 378**
Numerical Techniques in Linear Duct Acoustics—A Status Report (80-WA/NC-2) **I 270**
Passive Acoustic Detection of Gas Leaks in Buried Pipes (80-WA/NC-17) **I 314**
Acoustoelasticity
Acoustoelastic Effect of Rayleigh Surface Wave in Isotropic Material **AM 119**
Acoustoelastic Effect of Thickness Oscillations (BN) **AM 966**
On the Applicability of Acoustoelasticity for Residual Stress Determination (81-WA/APM-8) **AM 791**
Actuators
Torque Characteristics of a 122-Centimeter Butterfly Valve With a Hydro/Pneumatic Actuator **F 398**
Adams, D. F. Nonlinear Viscoelastic Analysis of a Unidirectional Composite Material (81-WA/APM-15) **AM 859**
Adams, D. R. Hydrodynamic Aspects of Fatigue in Plain Journal Bearings (80-C2/Lub-19) **L 150**
Adams, G. G. Steady Motion of an Elastic Beam Across a Rigid Step (81-WA/APM-7) **AM 606**
Adams, R. L. Extension of the Adams-Welty Fluid Bed Heat Transfer Model to the Packed Bed Case (TN) **HT 602**
Adams, T. F. Permeability Enhancement Using Explosive Techniques (80-Pet-70) **ERT 110**
Adaptive Control
Adaptive Control Optimization of Grinding (D) **I 352**; (AC) **I 353**
Adaptive Controllers
Model Reference Adaptive Controllers and Stochastic Self-Tuning Regulators—A Unified Approach **DS 404**
Adaptive Filters
A Discrete-Time Adaptive Filter for Stochastic Distributed Parameter Systems **DS 266**
Added Mass
Added Mass and Hydrodynamic Damping of Perforated Plates Vibrating in Water **PVT 175**
Additives
Antiwear Mechanism of ZDDP in the Presence of Calcium Sulfonate Detergent **L 486**; (D) **L 494, 495**; (AC) **L 495**
Adhered Fragments
The Behavior of Adhered Fragments Interposed Between Sliding Surfaces and the Formation Process of Wear Particles **L 195**
Adherends
Viscoelastic Analysis of Adhesively Bonded Joints **AM 331**
Adhesion
The Adhesion, Friction, and Wear of Binary Alloys in Contact With Single-Crystal Silicon Carbide (80-C2/Lub-53) **L 180**
The Grinding of Workpieces Exhibiting High Adhesion—Part 1: Mechanisms **I 144**
Adhesive Wear Coefficients
The Wear Coefficient—Magnitude, Scatter, Uses (80-C2/Lub-4) **L 188**; (D) **L 193**; (AC) **L 194**
Adhesively Bonded Joints
Viscoelastic Analysis of Adhesively Bonded Joints **AM 331**
Adiabatic Dead Space
A Mathematical Model for the Stirling Engine Cycle **P 505**
Adkins, R. C. The Hybrid Diffuser (80-GT-136) **P 229**
Advanced Gas Turbines
Outline of Plan for Advanced Reheat Gas Turbine (81-GT-28) **P 772**
Aerodynamic Coefficients
The Effect of the Axial Velocity Density Ratio on the Aerodynamic Coefficients of Compressor Cascades (80-GT-134) **P 210**
Aerodynamic Lateral Forces
Modeling and Dynamic Response of Maglev Vehicles Subjected to Crosswind Gusts (80-WA/DSC-8) **DS 251**
Aerodynamic Phase Lag
The Effect of Aerodynamic Phase Lag on the Twin Vibration Mode Model of Aeroengine Fan Flutter (80-GT-166) **P 313**
Aerodynamics
Aerodynamic Effects of Shape, Camber, Pitch, and Ground Proximity on Idealized Ground-Vehicle Bodies **F 631**; (D) **F 637, 638**; (AC) **F 638**
Aerodynamic and Geometric Design Criteria for the Performance of Low Powered Vehicular Gas Turbines (80-GT-117) **P 158**
Direct Approach to Aerodynamic Design Problems **AM 721**
The Effect of Cross-Winds on Trains **F 170**
Wake Induced Time-Variant Aerodynamics Including Rotor-Stator Axial Spacing Effects **F 59**
Aeroelastic Instability
Advances in Labyrinth Seal Aeroelastic Instability Prediction and Prevention (80-GT-151) **P 308**
Aeroelasticity
A Modern Course in Aeroelasticity (BR) **MD 261**
Aeroengine Fans
The Effect of Aerodynamic Phase Lag on the Twin Vibration Mode Model of Aeroengine Fan Flutter (80-GT-166) **P 313**
Affinity Relations
Development of Affinity Relations for Modeling Characteristics of Check Valves (80-Pet-36) **ERT 196**
Agarwal, A. K. Field Results From a Linked Vertical Well UCG Test in Deep, Thin-Seam Bituminous Coal **ERT 277**
Agarwal, P. K. The Third Two-Dimensional Problem of Three-Dimensional Blade Systems of Hydraulic Machines—Part 1: Theoretical Analysis **F 33**; Part 2: Analytical Results **F 42**
Agarwal, S. L. Field and Laboratory Studies for Evaluating Submarine Pipeline Frictional Resistance **ERT 250**
Age-Dependent Growth
The Bilinear, Modal State Equations for Age-Dependent Growth Control **DS 89**
Age Softening
Age Softening Characteristics of Annealed 2-1/4 Cr-1 Mo Steel in the Temperature Range 424 to 704°C **MT 62**
Ahiuwalia, R. K. Two-Dimensional Performance Analysis and Design of MHD Channels **F 307**
Ahmed, A. M. The Role of Secondary Variables in the Measurement of the Mechanical Properties of the Lumbar Intervertibral Joint **BE 129**
Ahmed, S. R. Wake Structure of Typical Automobile Shapes **F 162**
Air
Fluid Flow Through a Class of Highly-Deformable Porous Media Part 1: Experiments With Air **F 432**; (D) **F 438**; (AC) **F 439**; Part II: Experiments With Water **F 440**
Air Conditioners
Analysis and Design of Efficient Absorbers for Low-Temperature Desiccant Air Conditioners **SE 67**
Air Conditioning
Mathematical Model for Design Conditions for Cooling Load Calculations (80-C2/DET-122) **MD 328**
Air Enclosures
Heat Transfer in Air Enclosures of Aspect Ratio Less than One **HT 617**
Air Flux
Propagation and Extinction of Combustion Fronts in Crushed Oil Shale (80-Pet-77) **ERT 133**
Air Pollution
Performance and Air Pollutant Emissions of an Experimental Water/Residual Oil Emulsion Burner in a Commercial Boiler **P 788**
Air Solar Collectors
Theoretical and Experimental Study of an Air Solar Collector with an Evacuated Tube Cover **SE 251**
Air Velocities
A Correlation for Air Velocities in Cylindrical Prechambers of Diesel Engines **P 499**
Airblast Atomization
Airblast Atomization of Alternative Liquid Petroleum Fuels under High Pressure Conditions **P 514**
Aircraft
Fluidics in Aircraft Engine Cotnrols **DS 324**
Resonant Whirling of Aircraft Propeller-Engine Systems **AM 929**
Aircraft Engines
Application of the Semi-Loof Thin Shell Element to the Analysis of Aircraft Engine Structures **P 511**
The Design, Development and Operation of Gas Turbine Ratio Telemetry Systems **P 473**
Airflow
Calculation of Windmilling Characteristics of Turbojet Engines (80-GT-50) **P 1**
Airfoils
An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large Scale Turbine Blade Cascade (D) (AC) **P 602**
Forces on Staggered Airfoil Cascades in Unsteady In-Phase Motion **F 299**
Transonic Flow Computations in Cascades Using Finite Element Method (81-GT-4) **P 657**
Wake Induced Time-Variant Aerodynamics Including Rotor-Stator Axial Spacing Effects **F 59**
Airless Spray Nozzles
Drop-Size Distributions of Newtonian and Bingham Liquid Sprays Produced by Fan-Jet Pressure Nozzles With and Without the Precrifice (81-PID-3) **I 402**
Ajaksiya, B. A. A Correlation for Air Velocities in Cylindrical Prechambers of Diesel Engines **P 499**
Akay, H. U. Transonic Flow Computations in Cascades Using Finite Element Method (81-GT-4) **P 657**
Akeson, W. H. The Time and History-Dependent Viscoelastic Properties of the Canine Medial Collateral Ligament **BE 293**
Akimoto, H. NO_x Removal Process by Injection of NH_3 and H_2O_2 in Gas Turbine Exhaust Gas **P 589**
Akin, L. S. Analytical and Experimental Spur Gear Tooth Temperature as Affected by Operating Variables (80-C2/DET-34) **MD 219**
Alam, J. Modeling Capabilities for the Devonian Gas Shales **ERT 270**
Alamgir, Md. Correlation of Pressure Undershoot During Hot-Water Depressurization **HT 52**
Alaskan Beaufort Sea
The Design and Construction of Beaufort Sea Drilling Islands—Sag Delta 7 and 8 **ERT 208**
Alben, R. Theoretical and Experimental Study of an Air Solar Collector with an Evacuated Tube Cover **SE 251**
Al Dabbagh, N. A. The Influence of Premixed Combustion Flame Stabilizer Geometry on Flame Stability and Emissions (81-GT-26) **P 749**
Aldo Modal
Stability of Thermoelastic Contact for the Aldo Model **AM 555**
Alexopoulos, P. A Phenomenological Model for Transient Deformation Based on State Variables **MT 314**
Alexopoulos, P. S. A State Variable Analysis of Inelastic Deformation of Thin Walled Tubes **MT 305**
Algebraic Motions
Kinematic Mappings. Part 1: Classification of Algebraic Motions in the Plane (80-DET-16) **MD 585**
Ali, A. An Analytical and Experimental Investigation of Bubble Waiting Time in Nucleate Boiling **HT 673**
Ali, S. Basic Transport Equations in Ascending Equiangular Spiral Polar Coordinates (BN) **AM 190**

Alic, J. A. The Effects of Periodic High Loads on Fretting Fatigue **MT 223**
Allen, K. W. Design of an Actively Controlled Snow Ski Release Binding **BE 138**
Allen, R. R. Dynamics of Mechanisms and Machine Systems in Accelerating Reference Frames **DS 395**; Longitudinal Instability in Braked Landing Gear **DS 259**
Alley, T. L. Optimal Isolation of a Single-Degree-of-Freedom System With Quadratic-Velocity Damping (BN) **AM 676**
Allman, D. J. The Annular Membrane Under Axial Load (BN) **AM 975**
Alloy Development
Multispecimen Fatigue Crack Propagation Testing **MT 240**
Alloy Steel
An Explanation for the Effects of Hold Periods on the Elevated Temperature Fatigue Behavior of 2 1/4 Cr-1 Mo Steel **MT 7**
Alloy Tubes
Creep Rupture Bending Test of 20 Percent Cold-Prestrained Ni-Fe-Cr Alloy Straight Tubes at 1100 F (593 C) (80-C2/PVP-18) **PVT 337**
Alloys
The Adhesion, Friction, and Wear of Binary Alloys in Contact With Single-Crystal Silicon Carbide (80-C2/Lub-53) **L 180**
Development of a Procedure for Estimating the High Cycle Fatigue Strength of Some High Temperature Structural Alloys **MT 97**
The Effect of Product Form Upon Fatigue-Crack Growth Behavior in Alloy 718 (81-Mat-1) **MT 234**
Long-Life Fatigue Test Results for Two Nickel-Base Structural Alloys **MT 126**
A Statistical Investigation of Microstructure and Crack Growth in Titanium Alloys (80-GT-125) **P 180**
Alperi, R. W. Tube Wall Temperatures of an Eccentrically Located Horizontal Tube within a Narrow Annulus with Tube Contact (TN) **HT 186**
Al-Sharif, M. M. An Integral Analysis for Heat Transfer in Turbulent Incompressible Boundary Layer Flow **HT 772**
Altenpohl, D. G. *(author)* Materials in World Perspective (BR) **MT 78**
Alternative Energy Source
The Interrelation between Recurrent and Capital Costs in a Solar Thermal Process Heat System **SE 241**
Alternative Liquid Fuels
Airblast Atomization of Alternative Liquid Petroleum Fuels under High Pressure Conditions **P 514**
Alumina Wheels
The Grinding of Workpieces Exhibiting High Adhesion—Part 1: Mechanisms **I 144**
Aluminum
Aluminum Matrix Composite Elasticity Measured Ultrasonically (BN) **AM 985**
Creep of 2618 Aluminum Under Side-Steps of Tension and Torsion and Stress Reversal Predicted by a Viscous-Viscoelastic Model (81-APM-8) **AM 47**
Design of Aluminum Bicycle Frames **MD 901**
Aluminum Alloy
The Effects of Periodic High Loads on Fretting Fatigue **MT 223**
A Statistically Based Investigation of the Environmental and Cyclic Stress Effects on Fretting Fatigue **MT 218**
American Society of Mechanical Engineers
Editorial (Ed) **SE 181**
The History of Tribology in America **L 323**
Amitay, G. Adaptive Control Optimization of Grinding (80-WA/PROD-12) **I 103**
Ammon, R. L. Creep Rupture Behavior of Selected Turbine Materials in Air, Ultra-High Purity Helium, and Simulated Closed Cycle Brayton Helium Working Fluids (80-GT-173) **P 331**
Ammonia Turbine Design
Ammonia Turbine Design for Ocean Thermal Energy Conversion (OTEC) Plants **SE 92**
Ammonia/Water Cycle
A Single-Stage Ammonia/Water Absorption Cycle With Integrated Heat Exchange Components **SE 42**
Amplifiers
A High Order, Lumped Parameter, Jet Dynamic Model for the Frequency Response of Laminar Proportional Amplifiers **DS 317**
Vortex Amplifiers for Pipeline Protection **DS 358**
Analytical Prediction
An Investigation Into the Performance of Two Inlet Nozzles for Flow Measurement **F 67**; (D) (AC) **F 73**
Anand, S. Field and Laboratory Studies for Evaluating Submarine Pipeline Frictional Resistance **ERT 250**
Andersen, B. W. *(reviewer)* Analysis, Synthesis and Design of Hydraulic Servosystems and Pipelines (BR) **DS 73**
Anderson, G. R., II
An Investigation of the Mechanics and Noise Associated with Coal Cutting (80-WA/NC-1) **I 257**
Anderson, J. C. Analytical/Experimental Correlation of a Nonlinear System Subjected to a Dynamic Load **PVT 94**; Dynamic Response of a Beam With a Geometric Nonlinearity **AM 404**
Anderson, N. E. Effect of Geometry and Operating Conditions on Spur Gear System Power Loss (80-C2/DET-39) **MD 151**; Evaluation of a High Performance Fixed-Ratio Fraction Drive (80-C2/DET-38) **MD 410**; (D) **MD 417**; (AC) **MD 420**
Anderson, W. J. Design and Performance of Compliant Thrust Bearings With Spiral-Groove Membranes on Resilient Supports (80-C2/Lub-36) **L 373**; (D) **L 385, 386**; (AC) **L 386**; Dynamic Characteristics of a High-Speed Rotor With Radial and Axial Foil-Bearing Supports (80-C2/Lub-35) **L 361**; (D) **L 370, 371**; (AC) **L 371**; Externally Pressurized Two Layer Film Bearing—Gas Bearing With Liquid Layer (80-C2/Lub-41) **L 573**; (D) (AC) **L 577**
Andrews, G. E. The Influence of Premixed Combustion Flame Stabilizer Geometry on Flame Stability and Emissions (81-GT-26) **P 749**
Anemometers
Efficient Laser Anemometer for Intra-Rotor Flow Mapping in Turbomachinery **P 424**
Laser Anemometer Measurements in a Transonic Axial Flow Compressor Rotor **P 430**
Anemometry
Optical Advances in Laser Transit Anemometry **P 438**
Angel, Y. C. Scattering of Rayleigh Waves by a Plate Attached to a Half Space Through a Viscous Couplant (81-WA/APM-24) **AM 881**
Angular Oscillations
Generation of Oscillating Jets **F 609**
Angular Rate
Development of an Electrofluidic Rate Sensor **DS 303**
Anisotropic Hardening
Constitutive Equations of Elastoplastic Materials With Anisotropic Hardening and Elastic-Plastic Transition **AM 297**
Anisotropic Scattering
Anisotropic Two-Dimensional Scattering: Comparison of Experiment with Theory **HT 127**
Anisotropic Viscoplasticity
A Theory of Multiaxial Anisotropic Viscoplasticity (81-APM-21) **AM 276**
Annealed Materials
A Critical Appraisal of Static Hardness Measurements **AM 796**
Annealed Steel
Age Softening Characteristics of Annealed 2-1/4 Cr-1 Mo Steel in the Temperature Range 424 to 704°C **MT 62**
Annis, C. G., Jr. Gas Turbine Engine Disk Retirement-for-Cause: An Application of Fracture Mechanics and NDE (80-GT-127) **P 198**
Annual Energy Delivery
U.S. Contour Maps of Annual Energy Delivery by Flat Plate Collectors (TB) **SE 360**
Annular Diffusers
Optimum Strut Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) **F 294**
Annular Fins
The Effects of Nonuniform Heat Transfer from an Annular Fin of Triangular Profile (TN) **HT 184**
Annular Flow
Velocity Field and Entrainment of a Pulsed Core Jet **F 605**
Annular Jets
Calculation of Annular and Twin Parallel Jets Using Various Discretization Schemes and Turbulence-Model Variations **F 352**
Annular Membrane
The Annular Membrane Under Axial Load (BN) **AM 975**
Annular Passages
A Study of Some Turbulence Models for Flow and Heat Transfer in Ducts of Annular Cross-Section **HT 146**
Annular Plates
Buckling of Polar Orthotropic Annular Plates Under Uniform Inplane Compressive Forces (DDM) **AM 643**
Annular Transmission Lines
Frequency Response of Blocked Annular Fluid Transmission Lines **DS 366**
Anodic Smoothing
On Some Aspects of Surface Formation in ECM **I 341**
Aoki, H. Externally Pressurized Two Layer Film Bearing—Gas Bearing With Liquid Layer (80-C2/Lub-41) **L 573**; (D) (AC) **L 577**
Aoki, S. Crack-Tip Stress and Strain Singularity in Thermally Loaded Elastic-Plastic Material (BN) **AM 428**; Energy-Release Rate in Elastic-Plastic Fracture Problems (81-WA/APM-21) **AM 825**
Aortas
Flow Visualization in a Mold of an Atherosclerotic Human Abdominal Aorta **BE 168**
AppaRao, T. A. P. S. Lateral Dynamics of a Rail Transit Vehicle: A Comparison of Experimental and Theoretical Results **DS 39**
Applied Mechanics
Acceleration of Unbalanced Rotor Through the Resonance of Supporting Structure (81-APM-24) **AM 419**
Acoustoelastic Effect of Rayleigh Surface Wave in Isotropic Material **AM 119**
Acoustoelastic Effect of Thickness Oscillations (BN) **AM 966**
Aluminum Matrix Composite Elasticity Measured Ultrasonically (BN) **AM 985**
Amplitude Incremental Variational Principle for Nonlinear Vibration of Elastic Systems (81-WA/APM-26) **AM 959**
An Analysis of Contact Between a Pair of Surface Asperities During Sliding **AM 493**
Analysis of Mechanisms and Robot Manipulators (BR) **AM 214**
Analysis and Performance of Fiber Composites (BR) **AM 213**
An Analysis of Power Law Viscous Materials Under a Plane-Strain Condition Using Complex Stream and Stress Functions (81-WA/APM-1) **AM 486**
The Annular Membrane Under Axial Load (BN) **AM 975**
On the Applicability of Acoustoelasticity for Residual Stress Determination (81-WA/APM-8) **AM 791**
Application of the Method of Integral Relations to the Calculation of Two-Dimensional Incompressible Turbulent Boundary Layer **AM 701**
An Application of Mixture Theory to Particulate Sedimentation (D) (AC) **AM 210**
Application of the Reissner Method to a Timoshenko Beam (BN) **AM 672**
Approximate Description of Crack Kinking and Curving (81-APM-22) **AM 515**
Arrest of Mode III Fast Fracture by a Transition From Elastic to Viscoplastic Material Properties **AM 509**
Asymptotic Distributions for the Failure of Fibrous Materials Under Series-Parallel Structure and Equal Load-Sharing **AM 75**
Basic Transport Equations in Ascending Equiangular Spiral Polar Coordinates (BN) **AM 190**; (D) **AM 985**
On a Bénard Convection in the Presence of Dielectrophoretic Forces (BN) **AM 980**
Bending and Twisting of Internally Pressurized Thin-Walled Cylinder With Creep (BN) **AM 439**
Boundary Condition Independence in Coupled Thermoelasticity (BN) **AM 974**
On Branched, Interface Cracks (81-APM-20) **AM 529**
Buckling of a Clamped-Hinged Circular Arch Under Gas Pressure and Related Problems (BN) **AM 425**
Buckling of Polar Orthotropic Annular Plates Under

Uniform Inplane Compressive Forces (DDM) **AM 643**
Calculation of the Response of an Impulsively Excited Oscillator in an Infinite Acoustic Fluid **AM 749**
Characteristic Forms of Differential Equations for Wave Propagation in Nonlinear Media (81-WA/APM-23) **AM 743**
On the Characterization of Strain-Hardening in Plasticity (81-APM-26) **AM 285**
Closed-Form Approximations for Forces on Conical Penetrators Into Dry Porous Rock (BN) **AM 971**
Comments on Aleck's Stress Distribution in Clamped Plates (BN) **AM 442**
Constitutive Equations of Elastoplastic Materials With Anisotropic Hardening and Elastic-Plastic Transition **AM 297**
Constitutive Equations of Elastoplastic Materials With Elastic-Plastic Transition (D) **AM 211**
Contact Pressures on Closely Conforming Elastic Bodies **AM 543**
The Contact Problem for a Rigid Inclusion Pressed Between Two Dissimilar Elastic Half Planes **AM 104**
The Continuous Damage Theory of Brittle Materials. Part 1: General Theory **AM 809**; Part 2: Uniaxial and Plane Response Modes **AM 816**
A Correct Definition of Elastic and Plastic Deformation and Its Computational Significance **AM 35**; (Er) **AM 686**; (D) **AM 983**; (AC) **AM 984**
Crack Path Prediction for a Kinked Crack in the Neighborhood of a Circular Inclusion in an Infinite Medium (81-APM-31) **AM 313**
Crack-Tip Stress and Strain Singularity in Thermally Loaded Elastic-Plastic Material (BN) **AM 428**
Creep Analysis (BR) **AM 451**
Creep of 2618 Aluminum Under Side-Steps of Tension and Torsion and Stress Reversal Predicted by a Viscous-Viscoelastic Model (81-APM-8) **AM 47**
Creep and Creep Recovery of 304 Stainless Steel at Low Stresses With Effects of Aging on Creep and Plastic Strains (81-WA/APM-17) **AM 785**
Creeping Viscous Flow Around a Heat-Generating Solid Sphere **AM 239**
A Critical Appraisal of Static Hardness Measurements **AM 796**
Critical Compressive Stress of a Beam-Column to a Second Order (BN) **AM 978**
The Deformation of a Thin, Incomplete, Elastic Ring in a Frictional Channel (81-WA/APM-22) **AM 895**
Diffraction of Elastic Waves by a Surface Crack on a Plate **AM 570**
A Diagonally Dominant Solution for the Cylinder End Problem (81-WA/APM-12) **AM 876**
Direct Approach to Aerodynamic Design Problems **AM 721**
A Dislocation Model for Fatigue Crack Initiation (81-APM-3) **AM 97**
Dislocations in Solids: Dislocations in Metallurgy (BR) **AM 451**
Dislocations in Solids: Other Effects of Dislocations: Disclinations (BR) **AM 452**
Dislocations in Solids: Moving Dislocations (BR) **AM 214**
Dispersion in Laminar Flow Through Tubes by Simultaneous Diffusion and Convection **AM 217**
Drag on a Droplet in Translating Fluctuating Flow (BN) **AM 436**
Droplet Dynamics in Creeping Flows (81-APM-29) **AM 224**
Dynamic Analysis of Explosive-Metal Interaction in Three Dimensions **AM 30**
Dynamic Behavior of Continuous Cantilevered Pipes Conveying Fluid Near Critical Velocities (81-WA/APM-13) **AM 943**
Dynamic Response of a Beam With a Geometric Nonlinearity **AM 404**
Dynamic Stability of Truncated Conical Shells Under Pulsating Torsion **AM 391**
Dynamical Systems and Evolution Equations: Theory and Applications (BR) **AM 450**
Earthquake Response of Deformable Liquid Storage Tanks (80-C2/PVP-79) **AM 411**
An Educational Elasticity Problem With Friction. Part 1: Loading, and Unloading for Weak Friction (81-WA/APM-19) **AM 841**
The Effect of Crack-Tip Plasticity on the Determination of Dynamic Stress-Intensity Factors by the Optical Method of Caustics **AM 302**
Effect of the External Load on the Thermoelastoplastic Creep Deformation (BN) **AM 429**
The Effective Elastic Moduli of Porous Granular Rocks **AM 803**
Effects of a Circular Hole on States of Uniform Twisting and Shearing in Shallow Spherical Shells (BN) **AM 674**
Elastic Instability of a Heated Annular Plate Under Lateral Pressure **AM 399**
On an Elastic Theory of Friction (BN) **AM 438**
Elastodynamic Stress-Intensity Factors for a Crack Near a Free Surface **AM 539**
An Embedded Elliptical Crack, in an Infinite Solid, Subject to Arbitrary Crack-Face Fractions **AM 88**
Energy-Release Rate and Crack Kinking Under Combined Loading **AM 520**
Energy-Release Rate in Elastic-Plastic Fracture Problems (81-WA/APM-21) **AM 825**
On Energy-Release Rates for a Plane Crack (81-WA/APM-3) **AM 525**
On the Error That Can Be Induced by an Ergodicity Assumption (BN) **AM 654**
Exact Equations for the Large Inextensional Motion of Elastic Plates **AM 109**
The Exact Solutions of Some Stefan Problems With Prescribed Heat Flux **AM 732**
Equilibrium of Heavy Elastic Cylindrical Shells **AM 582**
Fatigue Failure Criteria for Unidirectional Fiber Composites **AM 846**
Finite Elastic-Plastic Deformation of a Rotating Hollow Cylinder (BN) **AM 666**
A Finite-Element Singular-Perturbation Technique for Convection-Diffusion Problems—Part 1: The One-Dimensional Case **AM 265**; Part 2: Two-Dimensional Problems **AM 272**
Finite-Element Solution of Elastic-Plastic Boundary-Value Problems (81-APM-17) **AM 69**
Finite Elements Based Upon Mindlin Plate Theory With Particular Reference to the Four-Node Bilinear Isoparametric Element **AM 587**
The Flow of a Non-Newtonian Fluid Past Projections and Depressions (D) **AM 448**
Folding of Elastica-Similarity Solutions (BN) **AM 199**
On the Formulation of Strain-Space Plasticity With Multiple Loading Surfaces (81-WA/APM-20) **AM 773**
Free Vibration of a Beam Supported by Unsymmetrical Spring Hinges (Er) **AM 449**
Free Vibration of Thin-Walled Open Section Beams With Unconstrained Damping Treatment **AM 169**
Gas-Driven Fracture Propagation **AM 757**
A Generalized Theory of Cell-to-Cell Mapping for Nonlinear Dynamical Systems (81-WA/APM-25) **AM 634**
Geophysical Fluid Dynamics (BR) **AM 684**
Harmonic Waves in Fiber-Reinforced Orthotropic Elastic Composites (BN) **AM 967**
Heat Conduction Through a Flat Punch **AM 871**
How to Optimally Support a Plate (BN) **AM 207**
An Improvement of the Stress Calculations in Plane Elasticity by Use of Spline Functions (BN) **AM 972**
Inelastic Dynamic Response of Rectangular Plates by Finite Elements (BN) **AM 441**
Infiltration of a Fluid Into a Dry Poro-Elastic Body **AM 259**
The Influence of Random Longitudinal Vibration on Channel and Pipe Flows of a Slightly Non-Newtonian Liquid (BN) **AM 681**
Injection and Mixing in Turbulent Flow (BR) **AM 988**
Instability of a Damped Rotor Partially Filled With an Inviscid Liquid (BN) **AM 674**
Instability of a Transversely Isotropic Elastic Slab Subjected to Axial Loads **AM 351**
Interferometry by Holography (BR) **AM 450**
On the Irrotational Flow Around a Horizontal Cylinder in Waves (81-WA/APM-18) **AM 689**
An Isoparametric Finite Element With Nodal Derivatives (81-APM-1) **AM 64**
Large Plane-to-Surface Deformations of Membranes With Inclusion **AM 357**
Linear Spatial Stability of Developing Flow in a Parallel Plate Channel (BN) **AM 192**
Loss of Contact in the Vicinity of a Right-Angle Corner for a Simply Supported, Laterally Loaded Plate (81-WA/APM-11) **AM 597**
Magnetohydrodynamic Boundary Layer on a Wedge (BN) **AM 656**
On the Mean Reynolds Equation in the Presence of Surface Roughness: Squeeze-Film Bearing **AM 717**
Mechanical Properties at High Rates of Strain. 1979. Proceedings of the Second Conference on the Mechanical Properties of Materials at High Rates of Strain (BR) **AM 685**
Mechanics of Ice-Lifting From a Flat Surface Through Penetration With a Sharp Blade (81-WA/APM-27) **AM 936**
Methoden der analytischen Störungsrechnung und ihre Anwendunge (BR) **AM 684**
A Micromechanical Description of Granular Material Behavior **AM 339**
Mode Interaction of Axially Stiffened Cylindrical Shells: Effects of Stringer Axial Stiffness, Torsional Rigidity, and Eccentricity (81-WA/APM-28) **AM 915**
A Model to Estimate Forces on Conical Penetrators Into Dry Porous Rock (81-APM-15) **AM 25**
Modeling of Nonholonomic Dynamic Systems With Applications (81-APM-12) **AM 177**
New Approaches to Nonlinear Problems in Dynamics (BR) **AM 453**
On the Nonbuckling of a Circular Ring Under "Wrapping" Loading (D) **AM 682**
Nondestructive Evaluation of the *J* and *M* Integrals (81-APM-2) **AM 83**
Nonlinear Harmonic Oscillations of Gyroscopic Structural Systems and the Case of a Rotating Ring (81-WA/APM-2) **AM 627**
On the Nonlinear Intrinsic Dynamics of Doubly Curved Shells (81-WA/APM-9) **AM 909**
Nonlinear Oscillations (BR) **AM 988**
Nonlinear Response of an Elastic Cylindrical Shell to a Transient Acoustic Wave (81-APM-10) **AM 15**
Nonlinear Theory for Flexural Motions of Thin Elastic Plate—Part 1: Higher-Order Theory **AM 377**; Part 2: Boundary-Layer Theory Near the Edge **AM 383**
A Nonlinear Theory of Viscoelasticity for Application to Elastomers (D) **AM 682**; (AC) **AM 683**
Nonlinear Viscoelastic Analysis of a Unidirectional Composite Material (81-WA/APM-15) **AM 859**
Note on the Energy-Release Rate for a Crack Starting From the Apex of a Wedge (BN) **AM 194**
Note on a Paper by Liu on the Scattering of Water Waves by a Pair of Semi-Infinite Barriers **AM 658**
Numerical and Experimental Simulations of Pseudoplastic Transient Pipe Flows **AM 1**
A Numerical Solution for Gas-Particle Flows at High Reynolds Numbers (81-WA/APM-10) **AM 465**
A Numerical Study of Nonaxisymmetric Stokesian Flow in a Circular Tube (81-WA/APM-16) **AM 459**
On a One-Dimensional Theory of Finite Torsion and Flexure of Anisotropic Elastic Plates **AM 601**
Optimal Isolation of a Single-Degree-of-Freedom System With Quadratic-Velocity Damping (BN) **AM 676**
Optimization in a Class of Hole Shapes in Plate Structures **AM 905**
Optimum Pulse Control of Flexible Structures **AM 819**
Parametric Instability of a Rotating Shaft Due to Pulsating Torque **AM 948**
Pendulum Analogy for Nonlinear Fluid Oscillations in Spherical Containers **AM 769**
Pendulum With a Rotational Vibration (BN) **AM 200**
The Penny-Shaped Crack and the Plane Strain Crack in an Infinite Body of Power-Law Material **AM 830**
A Perturbation Analysis of Fluid-Structure Interactions in a Model Test System **AM 7**
Planar Hertz Contact With Heat Conduction **AM 548**
Planar Motion of a Rigid Body With a Friction Rotor (BN) **AM 205**
Plane Elastic Waves Generated by Dynamical Loading Applied to Edge of Circular Hole (81-WA/APM-4) **AM 577**
The Plane Parallel Flow of a Binary Mixture of Fluids **AM 707**
On Plastic Strain in Porous Materials (BN) **AM 976**
On the Polygon-Circle Paradox (BN) **AM 195**
A Procedure to Generate Liapunov Functional for Distributed Parameter Systems (BN) **AM 188**
Propagation of Elastic Pulses and Acoustic Emission

in a Plate Part 1: Theory (81-APM-4) **AM 125**; Part 2: Epicentral Responses (81-APM-5) **AM 133**; Part 3: General Responses (81-APM-6) **AM 139**
On the Propagation of Weak Discontinuities Along Bicharacteristics in a Radiating Gas **AM 737**
On the Radial Oscillations of Multiple Gas Bubbles in an Incompressible Liquid **AM 727**
The Rate (Time)-Dependent Behavior of Ti-7Al-2Cb-1Ta Titanium Alloy at Room Temperature Under Quasi-Static Monotonic and Cyclic Loading (81-APM-7) **AM 55**
Reexamination of Stability of a Two-Dimensional Finite Panel Exposed to an Incompressible Flow **AM 472**
Reexamination of Unsteady Fluid Dynamic Forces on a Two-Dimensional Finite Plate at Small Mach Numbers (D) (AC) **AM 982**
Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: *P* and *SV* Motion (81-APM-18) **AM 155**
A Reinterpretation of the Palmgren-Miner Rule for Fatigue Life Prediction (D) **AM 446**; (AC) **AM 448**
Residual Stresses of Czochralski-Grown Crystal **AM 866**
Resonant Whirling of Aircraft Propeller-Engine Systems **AM 929**
Response of Periodic Systems to a Moving Load **AM 613**
Rheology (BR) **AM 450**
The Rolling Contact of Two Elastic-Layer-Covered Cylinders Driving a Loaded Sheet in the Nip **AM 889**
Rotating Compressible Flow Over the Edge of a Finite Disk (81-APM-19) **AM 249**
On the Savart-Masson Effect (BN) **AM 426**
Scattering of Rayleigh Waves by a Plate Attached to a Half Space Through a Viscous Couplant (81-WA/APM-24) **AM 881**
Self-Consistent Determination of Time-Dependent Behavior of Metals (81-APM-11) **AM 41**
A Self-Consistent Scheme for the Relaxation Behavior of Metals (81-WA/APM-14) **AM 779**
Similarity, Self-Similarity and Intermediate Asymptotics (BR) **AM 213**
Similarity Solutions to the Nonisothermal, Two-Dimensional Squeezing Flow of a Viscous Fluid (BN) **AM 670**
Solution of Navier's Equation in Rotational Curvilinear Coordinates (BN) **AM 659**
Some Considerations on Thermal Shock Problems in a Plate **AM 113**; (Er) **AM 686**
Some Observations in the Behavior of Laminated Composite Beams (BN) **AM 431**
On the Space of Stress Invariants (BN) **AM 664**
On the Stability of a Composite Beam With Initial Stress to Moving Loads (81-APM-25) **AM 368**
Stability of Developing Flow in a Pipe—Nonparallel Effects (81-APM-13) **AM 243**
On the Stability of Equilibrium Paths Associated With Autonomous Systems (81-APM-9) **AM 183**
Stability of a Heavy Column With an End Load (BN) **AM 668**
Stability Theorems for Multidimensional Linear Systems With Variable Parameters **AM 174**
Stability of Thermoelastic Contact for the Aldo Model **AM 555**
Stabilization of an Unstable Linear System by Parametric White Noise (BN) **AM 198**
Stable Phase of Ductile Fracture in Two and Three Dimensions, Final Stretch Model (81-WA/APM-5) **AM 500**
Steady Motion of an Elastic Beam Across a Rigid Step (81-WA/APM-7) **AM 606**
On Stiffness and Strength of an Aligned Short-Fiber Reinforced Composite Containing Fiber-End Cracks Under Uniaxial Applied Stress **AM 361**
Stress Concentrations in Cylindrically Orthotropic Composite Plates With a Circular Hole **AM 563**
Stress Distribution Around a Circular Hole in Square Plates, Loaded Uniformly in the Plane, on Two Opposite Sides of the Square (BN) **AM 203**
The Stress Distribution in Orthotropic Rotating Disks **AM 559**
Stress Field Due to a Cylindrical Inclusion With Constant Axial Eigenstrain in an Infinite Elastic Body **AM 853**
Stress-Intensity Factor for a Three-Dimensional Rectangular Crack **AM 309**
On Stress-Strain Relations Suitable for Cyclic and Other Loading (81-WA/APM-5) **AM 479**
On the Stokes Flow of Viscous Fluids Through Corrugated Pipes (Er) **AM 454**
Structural Control (BR) **AM 685**
The Study of Sluice Gate and Sharp-Crested Weir Through Hodograph Transformations (81-APM-23) **AM 229**
A Surface Integral Numerical Solution for Laminar Developed Duct Flow **AM 695**
The Symmetric Eigenvalue Problem (BR) **AM 988**
Theoretical and Experimental Investigation of Stress Waves at a Junction of Three Bars (81-APM-16) **AM 148**
Theories for Elastic Plates Via Orthogonal Polynomials **AM 900**
A Theory of Multiaxial Anisotropic Viscoplasticity (81-APM-21) **AM 276**
Thermal Stresses in Severe Environments (BR) **AM 453**
On Thermodynamics and Kinetic Theory of Ideal Rubber Membranes **AM 345**
Thickness Effects Are Minor in the Energy-Release Rate Integral for Bent Plates Containing Elliptic Holes or Cracks **AM 320**
Torsion of Pretwisted Beams Due to Axial Loading (D) **AM 679**; (AC) **AM 680**
Transient Response of a Finite Crack in a Half Plane Under Impact Load **AM 534**
Transient Response of a Finite Crack in a Strip With Stress-Free Edges (D) **AM 681**; (AC) **AM 682**
Transverse Vibrations of Beams, Exact Versus Approximate Solutions **AM 923**
Turbulence in the Free Atmosphere (BR) **AM 988**
Uncoupling Approximations in Fluid-Structure Interaction Problems With Cavitation **AM 753**
On the Uniqueness and Stability of Endochronic Theory (D) **AM 985**; (AC) **AM 986**
Unsteady Hydromagnetic Flow Near a Moving Porous Plate **AM 255**
The Vibrating Beam With Nonhomogeneous Boundary Conditions (BN) **AM 689**
Vibration of an Elastic Circular Plate on an Elastic Half Space—A Direct Approach **AM 161**
Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) **AM 371**
Vibrations of Free Circular Plates Having Elastic Constraints and Added Mass Distributed Along Edge Segments (BN) **AM 196**
Viscoelastic Analysis of Adhesively Bonded Joints **AM 331**
Viscoelastic Responses of Finite Bodies by Quadrature Form of Correspondence Principle (BN) **AM 206**

Approximate Programming
Optimum Path Planning for Mechanical Manipulators **DS 142**

Aqueous Chemical Solutions
Enhanced Oil Recovery by Flooding With Dilute Aqueous Chemical Solutions **ERT 285**

Arakeri, V. H. Cavitation Inception Observations on Six Axisymmetric Headforms **F 273**; (D) (AC) **F 279**; Inception of Cavitation From a Backward Facing Step **F 288**; The Initiation of Gaseous Microbubble Growth in Laminar Separation Bubbles **F 543**; (D) (AC) **F 549**; A Note on the Effect of Short and Long Laminar Separation Bubbles on Desinent Cavitation **F 28**; Viscous Effects in the Inception of Cavitation **F 280**

Arbitrary Cross Sections
Phase Distribution Mechanisms in Turbulent Two-Phase Flow in Channels of Arbitrary Cross Section **F 583**

Arbitrary Fin Configuration
A General Extended Surface Analysis Method **HT 699**

Arbitrary Heading Waves
Analysis of Motions of a Catamaran in Arbitrary Heading Waves **ERT 219**

Arbitrary Shape
On the Transient Convective Transport from a Body of Arbitrary Shape **HT 92**

Arc Tooth Gears
Tooth Bearing Analysis and Surface Durability of Symmetrical Conformal Gears **MD 141**

Arctic Regions
A Simple Model of Seasonal Sea Ice Growth (80-WA/HT-20) **ERT 212**

Arimoto, S. A New Feedback Method for Dynamic Control of Manipulators **DS 119**

Armstrong, W. P. Evaluation of Thermal Conductivity in Layered Vessels (82-PVP-1) **PVT 307**

Arrest
Arrest of Mode III Fast Fracture by a Transition From Elastic to Viscoplastic Material Properties **AM 509**

Arterial Casts
Correlation of Human Arterial Morphology With Hemodynamic Measurements in Arterial Casts **BE 204**

Arterial Endothelium
Vesicle Transport in Arterial Endothelium and the Influence of Mechanical Factors on Macromolecular Permeability **BE 186**

Arterial Wall
Hemodynamics and the Arterial Wall: An Introduction **BE 171**

Arteries
Correlation of Human Arterial Morphology With Hemodynamic Measurements in Arterial Casts **BE 204**
How Visualization in a Mold of an Atherosclerotic Human Abdominal Aorta **BE 168**
Location of Early Atheroma in the Human Coronary Arteries **BE 208**

Articular Cartilage
Effects of Nonlinear Strain-Dependent Permeability and Rate of Compression on the Stress Behavior of Articular Cartilage **BE 61**
Oscillatory Compressional Behavior of Articular Cartilage and Its Associated Electromechanical Properties **BE 280**
The Significance of Electromechanical and Osmotic Forces in the Nonequilibrium Swelling Behavior of Articular Cartilage in Tension **BE 221**

Artificial Defects
Acoustic Emission Monitoring During Rupture Test of Pressure Vessel and Laboratory Fracture Test **PVT 191**

Arvizu, D. E. Heliostat Characterization at the Central Receiver Test Facility **SE 82**

Asare, H. R. Liquid Sheet Jet Experiments: Comparison With Linear Theory **F 595**; (D) **F 603**; (AC) **F 604**

Ash Deposition
An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) **P 552**; (D) **P 558, 559**; (AC) **P 560**

Ashton, G. D. The Transition from Natural-Convection-Controlled Freezing to Conduction-Controlled Freezing (D) (AC) **HT 825**

Askew, M. J. Analysis of Model Variables and Fixation Post Length Effects on Stresses Around a Prosthesis in the Proximal Tibia **BE 239**

Aspect Ratios
The Combined Effect of Axial Velocity Density Ratio and Aspect Ratio on Compressor Cascade Performance (80-GT-138) **P 247**
Heat Transfer in Air Enclosures of Aspect Ratio Less than One **HT 617**

Asperity Interaction
Effect of Asperity Interaction on Pitting in Rollers and Gears (80-C2/DET-36) **MD 482**

Assembly Plants
Optimization Analysis of Automated Assembly Systems (80-WA/Prod-20) **I 224**

Astarita, G. *(editor)* Rheology (BR) **AM 450**

Asymmetric Rotors
Dynamic Characteristics of a High-Speed Rotor With Radial and Axial Foil-Bearing Supports (80-C2/Lub-35) **L 361**; (D) **L 370, 371**; (AC) **L 371**

Asymptotic Behavior
Perturbation Solutions of Transient Heat Transfer to a Porous Medium from a Fluid Stream (79-WA/HT-44) **HT 159**

Asymptotic Distributions
Asymptotic Distributions for the Failure of Fibrous Materials Under Series-Parallel Structure and Equal Load-Sharing **AM 75**

Asymptotics
Similarity, Self-Similarity and Intermediate Asymptotics (BR) **AM 213**

Atheroma
Location of Early Atheroma in the Human Coronary Arteries **BE 208**
Atherosclerosis
Issues and Current Studies (BR) **BE 217**
Atluri, S. N. An Embedded Elliptical Crack, in an Infinite Solid, Subject to Arbitrary Crack-Face Tractions **AM 88**
Atmospheric Constituents
Review, Evaluation, and Improvement of Direct Irradiance Models **SE 182**
Atmospheric Turbulence
Turbulence in the Free Atmosphere (BR) **AM 988**
Attached Masses
The Natural Frequencies and Mode Shapes of Cables With Attached Masses (81-Pet-10) **ERT 237**
Attia, M. H. System Approach to the Thermal Behavior and Deformation of Machine Tool Structures in Response to the Effect of Fixed Joints (80-WA/PROD-14) **I 67**
Au, H. Initial Region of Subsonic Coaxial Jets of High Mean-Velocity Ratio **F 335**
Audience Awareness
Writing for "The Audience" (80-C2/DET-125) **MD 342**
Auerbach's Law
On the Physical Basis of Auerbach's Law (TB) **MT 183**
Autofrettaged Tubes
Residual Stress Redistribution Caused by Notches and Cracks in a Partially Autofrettaged Tube (81-PVP-6) **PVT 302**
Automated Assembly Systems
Optimization Analysis of Automated Assembly Systems (80-WA/Prod-20) **I 224**
Automobiles
Roller Chain as a Transfer Drive for the Automobile **MD 19**
Wake Structure of Typical Automobile Shapes **F 162**
Automotive Cars
Hydrostatic Power Splitting Transmissions Design and Application Examples (80-GT-123) **P 168**
Automotive Vehicles
Control Systems for Automotive Vehicle Fuel Economy: A Literature Review **DS 173**
Autonomous Systems
On the Stability of Equilibrium Paths Associated With Autonomous Systems (81-APM-9) **AM 183**
Auxiliary Generator
Design Improvements in LiBr Absorption Chillers for Solar Applications **SE 56**
Au-Yang, M. K. A Structural Priority Approach to Fluid-Structure Interaction Problems **PVT 142**
Averaging
Methoden der analytischen Störungsrechnung und ihre Anwendunge (BR) **AM 684**
Avoidance Control
A Note on Avoidance Control **DS 69**
Awaji, H. Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (TB) **PVT 200**
Awbi, H. B. Effect of Wind-Tunnel Walls on the Drag of a Sphere **F 461**
Axial Compressors
Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) **F 391**; (D) AC) **F 395**
Axial Cracks
The Use of the Split Ring in Modeling Ductile Axial Crack Extension in Pipes **PVT 151**
Axial Conduction
Effects of Axial Conduction and Convective Boundary Conditions in Slug Flow Inside a Circular Tube **HT 436**
Axial Flow
Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (D) **P 603**; (AC) **P 603, 604**
Stalling Pressure Rise Capability of Axial Flow Compressor Stages (81-GT-3) **P 645**
Axial-Flow Turbines
Efficiency Prediction for Axial-Flow Turbines Operating with Nonconventional Fluids (81-GT-15) **P 718**
Axial Forces
Some Notes on V-Belt Drives (80-C2/DET-91) **MD 8**
Axial Loading
The Annular Membrane Under Axial Load (BN) **AM 975**
Design Formulas for Expansion Bellows **MD 881**
Instability of a Transversely Isotropic Elastic Slab Subjected to Axial Loads **AM 351**
Torsion of Pretwisted Beams Due to Axial Loading (D) **AM 679**; (AC) **AM 680**
Axial Thrust
Friction Between High Speed Gear Coupling Teeth **MD 54**; (D) **MD 59**; (AC) **MD 60**
Axial Velocity
The Combined Effect of Axial Velocity Density Ratio and Aspect Ratio on Compressor Cascade Performance (80-GT-138) **P 247**
Axisymmetric Bodies
The Effect of Nuclei on the Inception of Bubble and Sheet Cavitation on Axisymmetric Bodies **F 557**
Observations of the Various Types of Limited Cavitation on Axisymmetric Bodies **F 415**
Axisymmetric Headforms
Cavitation Inception Observations on Six Axisymmetric Headforms **F 273**; (D) (AC) **F 279**
Cavitation Inception Tests on Axisymmetric Headforms **F 268**
Axisymmetric Jet
Search for Large-Scale Coherent Structures in the Nearly Self-Preserving Region of a Turbulent Axisymmetric Jet **F 503**
Ayad, S. S. A Numerical Model for the Flow Within the Tower of a Tornado-Type Wind Energy System **SE 299**
Azuhata, S. NO_x Removal Process by Injection of NH_3 and H_2O_2 in Gas Turbine Exhaust Gas **P 589**

B

Babcock, C. D. Experimental Determination of the Propagation Pressure of Circular Pipes (82-PVP-2) **PVT 328**
Bachalo, W. D. An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) **P 759**
Back Pressure
Design of Discharge Piping for Pressure Relief Systems (80-Pet-59) **ERT 190**
Backlash
Factors Affecting Fatigue Strength of Nylon Gears (80-C2/DET-104) **MD 543**
Rotational Vibration With Backlash—Part 2 (80-C2/DET-61) **MD 387**
Backlay Welding
A Computational Model of Backlay Welding for Controlling Residual Stresses in Welded Pipes **PVT 226**
Backward-Bending Jet
A Theoretical Model for the Transverse Impingement of Free Jets at Low Reynolds Number (D) (AC) **F 374**
Backward Facing Step
Inception of Cavitation From a Backward Facing Step **F 288**
Baffled Shell
Transient Response of a Latent Heat Storage Unit: An Analytical and Experimental Investigation **SE 275**
Baheti, R. S. Experimental Results in the Modeling and Control of a Small Furnace **DS 370**
Bahgat, B. M. Kinematic Analysis of Spatial Mechanisms Using Train Components **MD 823**
Bahniuk, E. A Method of Analyzing the Three-Dimensional Stiffness Properties of the Intact Human Lumbar Spine (TB) **BE 299**
Bailey, D. A. Development of a Large-Scale Wind Tunnel for the Simulation of Turbomachinery Airfoil Boundary Layers (81-GT-6) **P 678**
Balance Platform Measurements
Effects of Subject Position on Balance Platform Measurements (TB) **BE 213**
Balancing
The Balancing of Rotating Shafts by Quadratic Programming (80-DET-45) **MD 831**
Demonstration of a Unified Approach to the Balancing of Flexible Rotors (80-GT-87) **P 101**
A New Concept for Force Balancing Machines for Planar Linkages. Part 2: Application to Four-Bar Linkage and Experiment (80-DET-74) **MD 784**
Optimum Balancing of Combined Pitching and Yawing Moments in High-Speed Machinery (80-DET-7) **MD 571**
Balas, M. J. Nonlinear State Estimation and Feedback Control of Nonlinear and Bilinear Distributed Parameter Systems **DS 78**
Balje, O. E. Aerodynamic and Geometric Design Criteria for the Performance of Low Powered Vehicular Gas Turbines (80-GT-117) **P 158**; *(author)* Turbomachines—A Guide to Design Selection and Theory (BR) **F 644**
Ball Bearings
Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) **MD 410**; (D) **MD 417**;(AC) **MD 420**
Minimum Load Requirements for the Prevention of Skidding in High Speed Thrust Loaded Ball Bearings (80-C2/Lub-3) **L 35**
Some Limitations in Applying Classical EHD Film Thickness Formulas to a High-Speed Bearing (80-C2/Lub-13) **L 295**; (D) **L 301**; (AC) **L 303**
Technology Transfer in the Determination of Torque Characteristics of R4A Ball Bearings at High Speeds With Radial Load (80-C2/DET-82) **MD 264**
Balloon Surface
Determination of Balloon Surface in Textile Machines—A Finite Segment Approach **I 424**
Banerjee, S. Refilling and Rewetting of a Hot Horizontal Tube. Part III: Application of a Two-Fluid Model to Analyze Rewetting **HT 653**
Banerji, S. K. Strong Tough HSLA Steels Via Processing and Heat Treating of Cu-Ni-Cb and Cu-Ti- B Compositions **MT 207**
Bankoff, S. G. Destabilization of Film Boiling Due to Arrival of a Pressure Shock: Part 1: Experimental **HT 459**; Part II: Analytical **HT 465**
Banks, P. J. A General Theory of Wet Surface Heat Exchangers and its Application to Regenerative Evaporative Cooling **HT 579**
Bannerot, R. B. Design, Evaluation, and Testing of a Moderately Concentrating, Nontracking Solar Energy Collector **SE 34**; *(reviewer)* Solar Energy (BR) **SE 75**
Bao, M. S. Optimum Design of an Abrasive Disk **MD 818**
Barber, D. S. Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (80-WA/FE-9) **F 97**
Barber, J. R. Heat Conduction Through a Flat Punch **AM 871**; Planar Hertz Contact With Heat Conduction **AM 549**; The Role of Elastic Tangential Compliance in Oblique Impact (80-C2/Lub-22) **L 74**; Stability of Thermoelastic Contact for the Aldo Model **AM 555**
Bar-Cohen, A Optimum Cylindrical Pin Fin (TN) **HT 814**
Bardina, J. A Prediction Method for Planar Diffuser Flows (81-FE-5) **F 315**
Bargeron, C. B. Correlation of Human Arterial Morphology With Hemodynamic Measurements in Arterial Casts **BE 204**
Barker, C. R. Potential Advantages to Water Jet Drilling for Use in In-Situ Coal Gasification Processes (80-PET-76) **ERT 147**
Barkon, I. Analysis of a Hydrodynamic Thrust Bearing With Incomplete Film (80-C2/Lub-27) **L 355**; (D) **L 359, 360**; (AC) **L 360**
Barman, N. C. Design Sensitivity Analysis of Planar Mechanism and Machine Dynamics (80-DET-6) **MD 560**
Barmish, B. R. A Note on Avoidance Control **DS 69**
Barnes, R. The Potential for Industrial Energy Conservation in California **I 52**
Barranger, J. P. Laser-Optical Blade Tip Clearance Measurement System **P 457**
Barrows, T. M. Modeling and Dynamic Response of Maglev Vehicles Subjected to Crosswind Gusts (80-WA/DSC-8) **DS 251**
Barsoum, M. Application of the Semi-Loof Thin Shell Element to the Analysis of Aircraft Engine Structures **P 511**
Barth, E. W. A Comparison of Film Temperatures and Oil Discharge Temperature for a Tilting-Pad Journal Bearing (80-C2/Lub-37) **L 115**

Bartholomae, R. Continuous Miner Noise (80-WA/NC-4) **I 282**
Barwell, F. T. Letter to the Editor **L 321**
Bar-Yoseph, P. The Effect of Inertia on Flow Between Misaligned Rotating Disks (80-WA/FE-2) **F 82**
Basic Research
Review—Basic Research Needs in Fluid Mechanics **F 509**
Basic Transport Equations
Basic Transport Equations in Ascending Equiangular Spiral Polar Coordinates (BN) **AM 190**
Bathelt, A. G. Heat Transfer and Interface Motion During Melting and Solidification Around a Finned Heat Source/Sink (80-HT-10) **HT 720**
Bauer, R. E. Multispecimen Fatigue Crack Propagation Testing **MT 240**
Baughn, J. W. An Investigation of Thermal Stratification in Horizontal Storage Tanks **SE 286**
Baum, M. R. Pneumatic Rupture of a Brittle Pipe: The Depressurization Transient Adjacent to the Ruptured Zone **PVT 287**
Baumeister, K. J. Numerical Techniques in Linear Duct Acoustics—A Status Report (80-WA/NC-2) **I 270**
Baumgarten, J. R. Pendulum Analogy for Nonlinear Fluid Oscillations in Spherical Containers **AM 750**
Baxter, M. L., Jr. Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) **MD 127;** (D) **MD 133;** (AC) **MD 133**
Bayard, S. Fracture Toughness of 4130 Quenched and Tempered Steel **MT 55**
Bayazitoglu, Y. Natural Convection and Sidewall Losses in Trapezoidal Groove Collectors **SE 167**
Bayley, F. J. Effects of Free-Stream Turbulence Intensity and Frequency on Heat Transfer to Turbine Blading (80-GT-79) **P 60**
Beachley, N. H. Simplified Fatigue Life Analysis for Traction Drive Contacts (80-C2/DET-40) **MD 430;** (D) **MD 438;** (AC) **MD 439**
Beam Radiation
An Algorithm for Calculating Monthly-Average Radiation on Inclined Surfaces **SE 29**
Beaman, J. J. Improved Statistical Linearization for Analysis and Control of Nonlinear Stochastic Systems—Part I: An Extended Statistical Linearization Technique **DS 14;** Part II: Application to Control System Design **DS 22**
Beams
Critical Compressive Stress of a Beam-Column to a Second Order (BN) **AM 978**
Dynamic Response of a Beam With a Geometric Nonlinearity **AM 404**
Free Vibration of a Beam Supported by Unsymmetrical Spring Hinges (Er) **AM 449**
Free Vibration of Thin-Walled Open Section Beams With Unconstrained Damping Treatment **AM 189**
Heliostat Characterization at the Central Receiver Test Facility **SE 82**
Some Observations in the Behavior of Laminated Composite Beams (BN) **AM 431**
On the Stability of a Composite Beam With Initial Stress to Moving Loads (81-APM-25) **AM 368**
Transverse Vibrations of Beams, Exact Versus Approximate Solutions **AM 923**
Beans, E. W. A Mathematical Model for the Stirling Engine Cycle **P 505**
Beard, J. T. Performance and Air Pollutant Emissions of an Experimental Water/Residual Oil Emulsion Burner in a Commercial Boiler **P 788**
Bearing Surfaces
An Analytical Solution for the Thermal Characteristics of Journal Bearings **L 443**
Bearing Systems
A Direct Integration Technique for the Transient Analysis of Rotating Shafts **MD 244**
Bearings
An Advanced Apparatus for the Study of Roller and Cage Slip in High-Speed Roller Bearings (80-C2/Lub-2) **L 46**
Calculated and Experimental Data for a 118-mm Bore Roller Bearing to 3 Million DN (80-C2/Lub-14) **L 274;** (D) **L 281;** (AC) **L 283**
A Cavitation Algorithm (80-C2/Lub-54) **L 350;** (D) (AC) **L 354**
A Comparison of Multifrequency Techniques for Measuring the Dynamics of Squeeze-Film Bearings (80-C2/Lub-46) **L 137**
Design and Performance of Compliant Thrust Bearings With Spiral-Groove Membranes on Resilient Supports (80-C2/Lub-36) **L 373;** (D) **L 385, 388;** (AC) **L 388**
Dynamic Analysis of a Cantilever-Mounted Gas-Lubricated Thrust Bearing (80-C2/Lub-32) **L 157**
Dynamic Characteristics of a High-Speed Rotor With Radial and Axial Foil-Bearing Supports (80-C2/Lub-35) **L 381;** (D) **L 370, 371;** (AC) **L 371**
Generation of Squeeze/Chatter in Water-Lubricated Elastomeric Bearings (80-C2/Lub-45) **L 406;** (D) (AC) **L 413**
High Speed Testing of the Hollow Roller Bearing (80-C2/Lub-6) **L 1**
Hydrodynamic Aspects of Fatigue in Plain Journal Bearings (80-C2/Lub-19) **L 150**
Lagare Cu Alunecare (Sliding Bearings) (BR) **L 319**
A New Solution to Coulomb Friction in Mechanism Bearings: Theory and Application (80-DET-52) **MD 784**
Performance of Computer-Optimized Tapered-Roller Bearings to 2.4 Million DN (80-C2/Lub-18) **L 13**
Prediction of the Operating Temperature of Thrust Bearings (80-C2/Lub-30) **L 97**
Rolling Bearing Life Modifying Factors for Film Thickness, Surface Roughness, and Friction (80-C2/Lub-16) **L 509;** (D) **L 516-518;** (AC) **L 519**
The Rotational Accuracy Characteristics of the Preloaded Hollow Roller Bearing (80-C2/Lub-23) **L 6**
Some Experiments on the Steady State Characteristics of a Cylindrical Fluid-Film Bearing Considering Thermal Effects (80-C2/Lub-34) **L 107**
Some Limitations in Applying Classical EHD Film Thickness Formulas to a High-Speed Bearing (80-C2/Lub-13) **L 295;** (D) **L 301;** (AC) **L 303**
On the Steady State and Dynamic Performance Characteristics of Floating Ring Bearings (80-C2/Lub-17) **L 389;** (D) (AC) **L 397**
The Vibration Isolating Properties of Uncentralized Sqeeze-Film Damper Bearings Supporting a Flexible Rotor **P 781**
Beavers, G. S. Fluid Flow Through a Class of Highly-Deformable Porous Media Part I: Experiments With Air **F 432;** (D) **F 438;** (AC) **F 439;** Part II: Experiments With Water **F 440**
Beck, B. T. A Generalization of the System Mean Void Fraction Model for Transient Two-Phase Evaporating Flows **HT 81**
Beck, J. V. Unsteady Surface Element Method **HT 759**
Becker, R. S. An Investigation of the Mechanics and Noise Associated with Coal Cutting (80-WA/NC-10 **I 257**
Beckman, W. A. Design Procedure and Application of Solar-Assisted Series Heat Pump Systems **SE 135;** *(author)* Solar Energy Programs for HP-41 and TI-59 Calculators (BR) **SE 382**
Beer, H. Prediction of Transient Inception of Boiling in Terms of a Heterogeneous Nucleation Theory (80-HT-113) **HT 69**
Beerbower, A. Failure of Thin Film Lubrication—The Effect of Running-In on the Load Carrying Capacity of Thin-Film Lubricated Concentrated Contacts (80-C2/Lub-42) **L 203;** (D) (AC) **L 209**
Begelinger, A. Failure of Thin Film Lubrication—The Effect of Running-In on the Load Carrying Capacity of Thin-Film Lubricated Concentrated Contacts (80-C2/Lub-42) **L 203;** (D) (AC) **L 209**
Beggs, H. D. Experimental Study of Oil-Water Flow in Inclined Pipes (80-Pet-51) **ERT 56;** Experimental Study of Two-Phase Normal Slug Flow in a Pipeline-Riser Pipe System (80-Pet-35) **ERT 67**
Bejan, A. Natural Convection in Horizontal Duct Connecting Two Fluid Reservoirs **HT 108;** Second Law Analysis and Synthesis of Solar Collector Systems **SE 23**
Bekey, G. A. Optimum Pulse Control of Flexible Structures **AM 619**
Bell, C. E. A Comparison of the Stability and Curving Performance of Radial and Conventional Rail Vehicle Trucks **DS 191;** Stability and Curving Mechanics of Rail Vehicles (80-WA/DSC-15) **DS 181**
Bellet, D. Numerical and Experimental Simulations of Pseudoplastic Transient Pipe Flows **AM 1**
Bellows
Design Formulas for Expansion Bellows **MD 881**
Belt Drives
Some Notes on V-Belt Drives (80-C2/DET-91) **MD 8**
Ben-Amoz, M. A Reinterpretation of the Palmgren-Miner Rule for Fatigue Life Prediction (D) **AM 446;** (AC) **AM 448**
Bending
Bending Fatigue Tests of High Speed Spur Gears (80-C2/DET-87) **MD 466**
Bending and Twisting of Internally Pressurized Thin-Walled Cylinder With Creep (BN) **AM 439**
Creep Rupture Bending Test of 20 Percent Cold-Prestrained Ni-Fe-Cr Alloy Straight Tubes at 1100 F (593C) (80-C2/PVP-18) **PVT 337**
A Plastic Fracture Instability Analysis of Wall Breakthrough in a Circumferentially Cracked Pipe Subjected to Bending Loads **MT 194**
A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part I: J-Integral Analysis (80-WA/PVP-3) **PVT 352;** Part II: Experimental Verification on a Type 304 Stainless Steel Pipe (80-WA/PVP-4) **PVT 359**
Bending Resistance
The Reduction of Capstan Effectiveness by Cable Bending Resistance (80-WA/OCE-2) **I 319**
Ben-Dror, J. Design Improvements in LiBr Absorption Chillers for Solar Applications **SE 58**
Benedict, R. P. An Investigation Into the Performance of Two Inlet Nozzles for Flow Measurement (D) (AC) **F 73**
Benenson, P. The Potential for Industrial Energy Conservation in California **I 52**
Bennett, J. G. Structural Confinement and Safety Design of a Fast Reactor Core (80-C2/DET-112) **MD 289**
Bennett, W. A. Wake Induced Time-Variant Aerodynamics Including Rotor-Stator Axial Spacing Effects **F 59**
Bennon, W. D. Mixed Convection Heat Transfer from Horizontal Cylinders in the Crossflow of a Finite Water Layer **HT 540**
Benson, R. C. The Deformation of a Thin, Incomplete, Elastic Ring in a Frictional Channel (81-WA/APM-22) **AM 895**
Bent Plates
Thickness Effects Are Minor in the Energy-Release Rate Integral for Bent Plates Containing Elliptic Holes or Cracks **AM 320**
Benton, M. A Dynamic Absorber for Gear Systems Operating in Resonance and Instability Regions (80-C2/DET-7) **MD 364;** Factors Influencing Instability and Resonances in Geared Systems (80-C2/DET-8) **MD 372**
Berenyi, T. Dynamic Continuous Path Synthesis of Industrial Robots Using ADAMS Computer Program (80-DET-41) **MD 602**
Berezin, I. V. *(editor)* Enzyme Engineering, Future Directions (BR) **BE 217**
Bergeles, G. The Prediction of Three-Dimensional Discrete Hole Cooling Process—Part 2: Turbulent Flow **HT 141**
Bergles, A. E. Critical Heat Flux in Helically Coiled Tubes **HT 680**
Berger, B. S. Solution of Navier's Equation in Rotational Curvilinear Coordinates (BN) **AM 659**
Bergquam, J. B. Performance Characteristics of a Thermosyphon Solar Domestic Hot Water System **SE 193**
Berman, I. Material Property Data and Their Use in Design and Analysis for an Elevated Temperature Solar Code **SE 345;** Near-Contact Explosive Forming **PVT 388**
Bernard, P. S. Computation of the Turbulent Flow in an Internal Combustion Engine During Compression **F 75**
Bert, C. W. *(reviewer)* Analysis and Performance of Fiber Composites (BR) **AM 213;** Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) **AM 371**
Berthe, D. Rheological and Thermal Effects in Lubricated E. H. D. Contacts **L 526;** Simulation

of Hertzian Contacts Found in Spur Gears with a High Preformance Disk Machine **MD 204**; On the Traction Behavior of Several Lubricants (80-C2/Lub-15) **L 55**

Bertuzzi, A. Volterra Series Expansion for Bilinear Systems in a Nonlinear Feedback Loop **DS 84**

Besson, B. Hydrostatic Power Splitting Transmissions Design and Application Examples (80-GT-123) **P 168**

Bevel Angle
The Effect of Bevel Angle on Safety Valve Vent-Pipe Systems **P 587**

Bhateja, C. P. The Rotational Accuracy Characteristics of the Preloaded Hollow Roller Bearing (80-C2/Lub-23) **L 6**

Bhushan, B. Friction and Wear Results from Sputter-Deposited Chrome Oxide With and Without Nichrome Metallic Binders and Interlayers (80-C2/Lub-49) **L 218**; Generation of Squeal/Chatter in Water-Lubricated Elastomeric Bearings (80-C2/Lub-45) **L 406**; (D) (AC) **L 413**; Henry Hess Award **L 165**; Structural and Compositional Characterization of RF Sputter-Deposited Ni-Cr + Cr_2O_3 Films (80-C2/Lub-31) **L 211**

Biaxial States
A Criterion for Low-Cycle Fatigue Failure Under Biaxial States of Stress **MT 1**

Bicego, V. Lubrication of a Melting Slider Under Nonisothermal Conditions **L 436**

Bicharacteristic Curves
On the Propagation of Weak Discontinuities Along Bicharacteristics in a Radiating Gas **AM 737**

Bicycle Frames
Design of Aluminum Bicycle Frames **MD 901**

Biery, J. C. Prediction of Heat Transfer Coefficients in Gas Flow Normal To Finned and Smooth Tube Banks **HT 705**

Bifurcation Phenomena
New Approaches to Nonlinear Problems in Dynamics (BR) **AM 453**

Biggs, F. An Analysis of the Influence of Geography and Weather on Parabolic Trough Solar Collector Design (80-C2/Sol-19) **SE 98**

Bile Ducts
Application of Hydroelastic Waves to the Removal of Small Gallstones **BE 79**

Bilinear Equations
The Bilinear, Modal State Equations for Age-Dependent Growth Control **DS 89**

Bilinear Systems
About Bilinear Systems and This Issue (F) **DS 75**
On the Inverse of a Special Class of Bilinear Systems (TB) **DS 103**
Volterra Series Expansion for Bilinear Systems in a Nonlinear Feedback Loop **DS 84**

Billet, M. L. A Comparison of Two Optical Techniques for Measuring Cavitation Nuclei **F 8**; Correlation of Thermodynamic Effects for Developed Cavitation **F 534**; The Effect of Secondary Vorticity on the Inception of Vortex Cavitation **F 19**; Mean Flow Measurements Near the Plane of an Open Rotor Operating with an Inlet Velocity Gradient **P 445**; Scale Effects on Various Types of Limited Cavitation **F 405**; (D) (AC) **F 414**

Bimodulus Composite Materials
Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) **AM 371**

Bimorph Construction
A Proportional Piezoelectric Electro-Fluidic Pneumatic Valve Design **DS 361**

Binary Mixture
The Plane Parallel Flow of a Binary Mixture of Fluids **AM 707**

Binder, G
Generation of Oscillating Jets **F 609**

Binding Release Criteria
Design of an Actively Controlled Snow Ski Release Binding **BE 138**

Bingham, C. E. Performance of Storage Walls with Highly Conductive Covering Plates and Connecting Fins **SE 201**

Bioengineers
Reflections on the History of Heat and Mass Transfer in Bioengineering **BE 97**

Biofouling
In Situ Biofouling of Ocean Thermal Energy Conversion (OTEC) Evaporator Tubes **SE 121**

Biogasification
Biogasification of Municipal Solid Wastes **ERT 180**

Biological Processes
The Bilinear, Modal State Equations for Age-Dependent Growth Control **DS 89**

Biomass
Engine Fuels From Biomass (81-DGP-4) **ERT 344**

Biomechanical Engineering
Analysis of Model Variables and Fixation Post Length Effects on Stresses Around a Prosthesis in the Proximal Tibia **BE 239**
An Analytical Model of Pauwels' Functional Adaptation Mechanism in Bone **BE 246**
Application of Hydroelastic Waves to the Removal of Small Gallstones **BE 79**
Biomechanical and Neurological Response of the Spinal Cord of a Puppy to Uniaxial Tension (Er) **BE 279**
Biomechanics: Mechanical Properties of Living Tissues (BR) **BE 231**
Correlation of Human Arterial Morphology With Hemodynamic Measurements in Arterial Casts **BE 204**
Design of an Actively Controlled Snow Ski Release Binding **BE 138**
Diffusion of Macromolecules Across the Arterial Wall in the Presence of Multiple Endothelial Injuries **BE 197**
The Dynamic Response of Vascular Endothelial Cells to Fluid Shear Stress **BE 177**
Effect of Vessel Tapering on the Transition to Turbulent Flow: Implications in the Cardiovascular System **BE 116**
Effects of Nonlinear Strain-Dependent Permeability and Rate of Compression on the Stress Behavior of Articular Cartilage **BE 61**
Effects of Subject Position on Balance Platform Measurements (TB) **BE 213**
Esophageal Accelerometer—Indicator of Cardiovascular Function **BE 160**
Experimental Measurements of the Flow-Induced Shear Stress Distribution in the Vicinity of Prosthetic Heart Valves **BE 267**
Flow Visualization in a Mold of an Atherosclerotic Human Abdominal Aorta **BE 166**
Hemodynamics and the Arterial Wall: An Introduction **BE 171**
On the Hemolytic and Thrombogenic Potential of Occluder Prosthetic Heart Valves From In-Vitro Measurements **BE 83**
Large Deformation Analysis of Some Soft Biological Tissues **BE 73**
Location of Early Atheroma in the Human Coronary Arteries **BE 208**
The Lung—A Perspective of Biomechanics Development **BE 91**
Mechanics of Blood Flow **BE 102**
A Method of Analyzing the Three-Dimensional Stiffness Properties of the Intact Human Lumbar Spine (TB) **BE 299**
Micromechanical Oscillators and Techniques for Determining the Dynamic Moduli of Microsamples of Human Cortical Bone at Microstrains **BE 146**
A One-Dimensional Model of Simultaneous Hemodialysis and Ultrafiltration With Highly Permeable Membranes **BE 261**
Oscillatory Compressional Behavior of Articular Cartilage and Its Associated Electromechanical Properties **BE 280**
Pulse-Decay Method for Measuring the Thermal Conductivity of Living Tissues **BE 253**
Reflections on the History of Heat and Mass Transfer in Bioengineering **BE 97**
The Retained Elasticity of Elastin Under Fixation Agents (TB) **BE 121**
The Role of Secondary Variables in the Measurement of the Mechanical Properties of the Lumbar Intervertebral Joint **BE 129**
The Significance of Electromechanical and Osmotic Forces in the Nonequilibrium Swelling Behavior of Articular Cartilage in Tension **BE 221**
Structural Properties of Immature Canine Bone **BE 232**
The Time and History-Dependent Viscoelastic Properties of the Canine Medial Collateral Ligament **BE 293**
Transient Study of Couple Stress Effects in Compact Bone: Torsion **BE 275**
Ultrasonic Measurement of Orthotropic Elastic Constants of Bovine Femoral Bone **BE 67**
Vascular Endothelial Morphology as an Indicator of the Pattern of Blood Flow **BE 172**
Vesicle Transport in Arterial Endothelium and the Influence of Mechanical Factors on Macromolecular Permeability **BE 186**
Why Sliding Seats and Short Stroke Intervals are Used for Racing Shells **BE 151**

Biomechanics
Biomechanics: Mechanical Properties of Living Tissues (BR) **BE 231**

Biomechanics Development
The Lung—A Perspective of Biomechanics Development **BE 91**

Biphasic Growth Process
Structural Properties of Immature Canine Bone **BE 232**

Bird, R. E. Review, Evaluation, and Improvement of Direct Irradiance Models **SE 182**

Birds
The Development of a Substitute Bird Model (81-GT-23) **P 725**

Bistritz, Y. Stable Linear Systems Simplification Via Padé Approximations to Hurwitz Polynomials **DS 279**

Bituminous Coal
Field Results From a Linked Vertical Well UCG Test in Deep, Thin-Seam Bituminous Coal **ERT 277**

Black, J. T. The Hammer QSD-Quick Stop Device for High Speed Machining and Rubbing (80-WA/PROD-13) **I 13**

Blade Failures
Long Arc Shrouding—A Reliability Improvement for Untuned Steam Turbine Blading (78-JPGC/Pwr-12) **P 522**; (D) **P 527, 528, 530**; (AC) **P 528, 529, 530**

Blade Rows
Nonaxisymmetric Blade Row Interaction in Axial Turbomachines (80-GT-133) **P 201**
Vorticity Modeling of Blade Wakes behind Isolated Annular Blade-Rows: Induced Disturbances in Swirling Flows (80-GT-140) **P 279**

Blade Systems
The Thrid Two-Dimensional Problem of Three-Dimensional Blade Systems of Hydraulic Machines—Part 1: Theoretical Analysis **F 33**; Part 2: Analytical Results **F 42**; (D) **F 483**

Blade Tip Clearance
Laser-Optical Blade Tip Clearance Measurement System **P 457**

Blade Wakes
Vorticity Modeling of Blade Wakes behind Isolated Annular Blade-Rows: Induced Disturbances in Swirling Flows (80-GT-140) **P 279**

Blades
Blade Excitation by Elliptical Whirling in Viscous-Damped Jet Engines (80-GT-168) **P 326**
Finite Element Methods for Transonic Blade-to-Blade Calculation in Turbomachines (81-GT-5) **P 665**
Long Arc Shrouding—A Reliability Improvement for Untuned Steam Turbine Blading (78-JPGC/Pwr-12) **P 522**; (D) **P 527, 528, 530**; (AC) **P 528, 529, 530**
Measurement of Turbine Rotor Blade Flows **P 400**
Superhybrid Composite Blade Impact Studies (81-GT-24) **P 731**

Blahey, A. G. Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) **MD 410**; (D) **MD 417**; (AC) **MD 420**

Blaine, D. G. Train Brake and Track Capacity Requirements for the '80s (81-RT-11) **I 392**

Blair, M. F. Development of a Large-Scale Wind Tunnel for the Simulation of Turbomachinery Airfoil Boundary Layers (81-GT-6) **P 678**

Blanc, C. Antiwear Mechanism of ZDDP in the Presence of Calcium Sulfonate Detergent **L 486**; (D) **L 494, 495**; (AC) **L 495**

Blanket Assembly Duct
Trial Application of the Draft Structural Design Criteria for Breeder Reactor Core Components to a Typical Blanket Assembly Duct **PVT 380**

Blazek, W. S. Water-Cooled Gas Turbine Monometallic Nozzle Development (80-GT-97) **P 141**

Blazowski, W. S. The Interrelationship between Soot and Fuel NO_x Control in Gas Turbine Combustors (80-GT-76) **P 43**
Blech, I. A. Comments on Aleck's Stress Distribution in Clamped Plates (BN) **AM 442**
Blech, J. J. The Effect of Inertia on Flow Between Misaligned Rotating Disks (80-WA/FE-2) **F 82**
Blessing, G. V. Aluminum Matrix Composite Elasticity Measured Ultrasonically (BN) **AM 965**
Blockage
A Blockage Model for Centrifugal Compressor Impellers (81-GT-11) **P 696**
Investigations of an Axial Compressor End-Wall Boundary Layer Prediction Method (80-GT-53) **P 20**
Blockage Ratios
Effect of Wind-Tunnel Walls on the Drag of a Sphere **F 461**
Blood Flow
Mechanics of Blood Flow **BE 102**
Vascular Endothelial Morphology as an Indication of the Pattern of Blood Flow **BE 172**
Bloom, J. M. An Analytical Assessment of the Effects of Residual Stresses and Fracture Properties on Service Performance of Various Weld Repair Processes **PVT 373**
Bloomer, J. W., II Motion of a Bored Sphere in a Spinning Spherical Cavity **DS 389**
Blowing
Unsteady Stagnation Point Heat Transfer with Blowing or Suction **HT 448**
Bluff Bodies
Aerodynamic Effects of Shape, Camber, Pitch, and Ground Proximity on Idealized Ground Vehicle Bodies **F 631**; (D) **F 637, 638**; (AC) **F 638**
A Comparison of Cold and Reacting Flows Around a Bluff-Body Flame Stabilizer **F 328**
Bluff Structures
Universal Similarity in the Wakes of Stationary and Vibrating Bluff Structures (80-WA/FE-4) **F 52**
Body-Fitted Coordinate Systems
Numerical Solution to a Two-Dimensional Conduction Problem Using Rectangular and Cylindrical Body-Fitted Coordinate Systems **HT 753**
Boehm, R. F. Design and Evaluation of Evaporating Lens Direct Contact Heat Exchangers **ERT 128**
Boffey, D. A. An Experimental Investigation of the Pressures at the Edge of a Gas Bearing Pocket **L 593**
Bogy, D. B. Scattering of Rayleigh Waves by a Plate Attached to a Half Space Through a Viscous Couplant (81-WA/APM-24) **AM 881**
Bohn, M. S. Heat-Exchanger Effectiveness in Thermoelectric Power Generation **HT 693**
Boil-Off
A Nondimensional Analysis of Boiling Dry a Vertical Channel with a Uniform Heat Flux **HT 667**
Boiling
Prediction of Transient Inception of Boiling in Terms of a Heterogeneous Nucleation Theory (80-HT-113) **HT 69**
Surface Contamination, Rejuvenation, and the Reproducibility of Results in Nucleate Pool Boiling **HT 453**
Boiling Heat Transfer
An Experimental Investigation of Boiling Heat Transfer of Fluorocarbon R-11 Refrigerant for Concentric-Tube Thermosyphon **HT 472**
Boiling Water
Performance of a Multiphase Boiling MHD Generator **P 582**
Boland, C. R.
The Nuclear Closed-Cycle Gas Turbine (HTGR-GT)—Dry Cooled Commercial Power Plant Studies (80-GT-82) **P 89**
Bolted Flanged Connections
Further Studies of the Interface Boundary Conditions for Bolted Flanged Connections **PVT 240**
Bone Samples
Ultrasonic Measurement of Orthotropic Elastic Constants of Bovine Femoral Bone **BE 67**
Bone Tissue
An Analytical Model of Pauwels' Functional Adaptation Mechanism in Bone **BE 246**
Boness, R. J. Minimum Load Requirements for the Prevention of Skidding in High Speed Thrust Loaded Ball Bearings (80-C2/Lub-3) **L 35**
Book, W. J. A Perspective on Robotics Research and This Issue (F) **DS 106**
Book Reviews
Analysis of Linear Dynamic Systems **MD 262**
Analysis of Mechanisms and Robot Manipulators **AM 214**
Analysis and Performance of Fiber Composites **AM 213**
Analysis, Synthesis and Design of Hydraulic Serosystems and Pipelines **DS 73**
B. M. Fraeijs de Veubeke Memorial Volume of Selected Papers **AM 684**
Biomechanics: Mechanical Properties of Living Tissues **BE 231**
Computational Fluid Dynamics **F 367**; Computational Fluid Dynamics, Vol. 2 **F 367**
Dislocations in Solids: Moving Dislocations **AM 214**
Elementary Finite Element Method **MD 685**
Engineering Plasticity by Mathematical Programming **MT 77**
Entropy, A New World View **SE 178**
Enzyme Engineering, Future Directions **BE 217**
Europe's Offshore Oil & Gas **ERT 200**
Fatigue of Welded Structures **MT 185**
Fluid Power With Applications **F 484**
Fracture Mechanics **MT 77**
Fundamentals of Gas-Particle Flow **F 644**
Geophysical Fluid Dynamics **AM 684**
Glass Reinforced Plastic in Construction: Engineering Aspects By Leonard Halloway **MT 78**
Injection and Mixing in Turbulent Flow **AM 988**
An International Survey of Shock and Vibration Technology **MD 685**
Issues and Current Studies **BE 217**
Lagare Cu Alunecare (Sliding Bearings) **L 319**
Lubrication Fundamentals (Mechanical Engineering Series, Vol. 3) **L 471**
Manufacturing Systems Engineering **DS 423**
Materials in World Perspective **MT 78**
McGraw-Hill Encyclopedia of Energy **ERT 200**
Mechanical Properties at High Rates of Strain. 1979. Proceedings of the Second Conference on the Mechanical Properties of Materials at High Rates of Strain **AM 685**
Metal Fatigue in Engineering (1980) **MT 346**
Metallic Materials Specification Handbook **MT 347**
Methoden der analytischen Störungsrechung und ihre Anwendunge **AM 684**
A Modern Course in Aeroelasticity **MD 261**
Nonlinear Oscillations **AM 988**
Proceedings of Noise-CON 79, Machinery Control Noise **MD 261**
Similarity, Self-Similarity and Intermediate Asymptotics **AM 213**
Small and Micro Hydroelectric Plants **F 484**
Solar Energy **SE 75**
Solar Energy Handbook **SE 382**
Solar Energy Programs for HP-41 and TI-59 Calculators **SE 382**
State Models of Dynamic Systems: A Case Study Approach **DS 297**
Structural Control **AM 685**
Structural Mechanics Softwear Series—Vol. II **MD 558**
The Symmetric Eigenvalue Problem **AM 988**
Thermal Deformation in Frictionally Heated Systems **L 164**
Thermal Energy Storage and Regeneration **SE 178**
Tribology: Friction, Lubrication, and Wear **L 320**
Turbomachines—A Guide to Design Selection and Theory **F 644**
Turbulence in the Free Atmosphere **AM 988**
Viscous Flow Drag Reduction **F 485**
Booker, J. F. A Cavitation Algorithm (80-C2/Lub-54) **L 350**; (D)(AC) **L 354**
Bore Roller Bearings
Calculated and Experimental Data for a 118-mm Bore Roller Bearing to a 3 Million DN (80-C2/Lub-14) **L 274**; (D) **L 281**; (AC) **L 283**
Bored Sphere
Motion of a Bored Sphere in a Spinning Spherical Cavity **DS 389**
Bose, S. K. Critical Compressive Stress of a Beam-Column to a Second Order (BN) **AM 978**
Bosma, R.
Mobility and Impedance Definitions for Plain Journal Bearings (TB) **L 468**
Bossler, R. B., Jr.
Friction Between High Speed Gear Coupling Teeth **MD 54**; (D) **MD 59**; (AC) **MD 60**
Boundary Conditions
Boundary Condition Independence in Coupled Thermoelasticity (BN) **AM 974**
Complete Numerical Solution of the Axisymmetrical Deep-Drawing Problem (81-WA/Mat-1) **MT 326**
Contact Temperature in Dry Bearings. Three Dimensional Theory and Verification (80-C2/Lub-40) **L 243**; (D) (AC) **L 252**
Effects of Axial Conduction and Convective Boundary Conditions in Slug Flow inside a Circular Tube **HT 436**
A Finite Element Method for the Elastic Contact Problems **I 456**
Further Studies of the Interface Boundary Conditions for Bolted Flanged Connections **PVT 240**
Heat Transfer in a Capillary Flow Emerging from a Reservoir **HT 429**
A Hybrid Numerical Method for Homogeneous Equilibrium Two-Phase Flows in One Space Dimension (80-C2/PVP-51) **PVT 20**
An Iterative Boundary Integral Numerical Solution for General Steady Heat Conduction Problems **HT 26**
Natural Convection from a Horizontal Cylinder—Laminar Regime **HT 522**
Theories for Elastic Plates Via Orthogonal Polynomials **AM 900**
The Vibrating Beam With Nonhomogeneous Boundary Conditions (BN) **AM 669**
Boundary Layer Flow
An Integral Analysis for Heat Transfer in Turbulent Incompressible Boundary Layer Flow **HT 772**
Boundary Layers
Boundary Layer Studies on Highly Loaded Cascades using Heated Thin Films and a Traversing Probe (80-GT-137) **P 237**
Development of a Large-Scale Wind Tunnel for the Simulation of Turbomachinery Airfoil Boundary Layers (81-GT-6) **P 678**
A Horizontal Flow Past a Partially Heated, Infinite Vertical Cylinder **HT 546**
An Investigation Into the Performance of Two Inlet Nozzles for Flow Measurement **F 67**; (D) (AC) **F 73**
Investigations of an Axial Compressor End-Wall Boundary Layer Prediction Method (80-GT-53) **P 20**
Laminar Free Convection Boundary Layer Heat Transfer Over Non-Isothermal Surface (TN) **HT 819**
Magnetohydrodynamic Boundary Layer on a Wedge (BN) **AM 656**
A Method for the Calculation of 3D Boundary Layers on Practical Wing Configurations **F 104**
Natural Convective Boundary-Layer on Two Dimensional and Axisymmetric Surfaces in High-Pr Fluids or in Fluid-Saturated Porous Media **HT 803**
Nonlinear Theory for Flexural Motions of Thin Elastic Plate—Part 1: Higher-Order Theory **AM 377**; Part 2: Boundary-Layer Theory Near the Edge **AM 383**
Boundary Stresses
Optimization in a Class of Hole Shapes in Plate Structures **AM 905**
Boundary-Value Problems
Finite-Element Solution of Elastic-Plastic Boundary-Value Problems (81-APM-17) **AM 69**
Bounding Surface
Constitutive Equations of Elastoplastic Materials With Elastic-Plastic Transition (D) **AM 211**
The Workspaces of a Mechanical Manipulator (80-DET-107) **MD 665**
Bouquet, F. L. Glass as Encapsulation for Low-Cost Photovoltaic Solar Arrays **SE 221**
Bourne, J. R. Design Improvements in LiBr Absorption Chillers for Solar Applications **SE 56**
Bovine Femoral Bone
Ultrasonic Measurement of Orthotropic Elastic Constants of Bovine Femoral Bone **BE 67**
Bowen, W. L. High Speed Testing of the Hollow Roller Bearing (80-C2/Lub-6) **L 1**
Bowl-Type Feeders
Study on Vibratory Feeders: Calculation of Natural

Frequency of Bowl-Type Vibratory Feeders **MD 249**

Bowyer, J. M. The Effects of Regional Insolation Differences upon Advanced Solar Thermal Electric Power Plant Performance and Energy Costs (79-WA/Sol-1) **SE 213**

Boyd, J. N. A One Dimensional Crystal With Nearest Neighbors Coupled Through Their Velocities (TB) **DS 293**

Boyer, J. C. An Improvement of the Stress Calculation in Plane Elasticity by Use of Spline Functions (BN) **AM 972**

Brach, R. M. Moments Between Impacting Rigid Bodies **MD 812**

Bradshaw, P. The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-13) **F 119**; (D) (AC) **F 126**

Braking

Longitudinal Instability in Braked Landing Gear **DS 529**

Branch, M. C. Propagation and Extinction of Combustion Fronts in Crushed Oil Shale (80-Pet-77) **ERT 133**

Branched Cracks

On Branched, Interface Cracks (81-APM-20) **AM 529**

Breakdowns

Optimization Analysis of Automated Assembly Systems (80-WA/Prod-20) **I 224**

Breaking Load

Efficiency of Wire Rope Terminations **MT 164**

Breeder Reactors

Trial Application of the Draft Structural Design Criteria for Breeder Reactor Core Components to a Typical Blanket Assembly Duct **PVT 380**

Breeding Performance

EBR-II Metallic Driver Fuel—A Live Option (80-C2/NE-23) **P 612**

Bremhorst, K. A Modified Form of the k-ϵ Model for Predicting Wall Turbulence **F 456**; Velocity Field and Entrainment of a Pulsed Core Jet **F 605**

Brennen, C. Cavitation Inception in Spool Valves **F 564**; (D) **F 575**; (AC) **F 576**

Brewe, D. E. Design and Performance of Compliant Thrust Bearings With Spiral-Groove Membranes on Resilient Supports (80-C2/Lub-36) **L 373**; (D) **L 385, 386**; (AC) **L 386**

Brewer, J. W. The Bilinear, Modal State Equations for Age-Dependent Growth Control **DS 89**

Brief Notes

Acoustoelastic Effect of Thickness Oscillations **AM 986**

Aluminum Matrix Composite Elasticity Measured Ultrasonically **AM 985**

The Annular Membrane Under Axial Load **AM 975**

Application of the Reissner Method to a Timoshenko Beam **AM 672**

Basic Transport Equations in Ascending Equiangular Spiral Polar Coordinates **AM 190**

On a Benard Convection in the Presence of Dielectrophoretic Forces **AM 980**

Bending and Twisting of Internally Pressurized Thin-Walled Cylinder With Creep **AM 439**

Boundary Condition Independence in Coupled Thermoelasticity **AM 974**

Buckling of a Clamped-Hinged Circular Arch Under Gas Pressure and Related Problems **AM 425**

Closed-Form Approximations for Forces on Conical Penetrators Into Dry Porous Rock **AM 971**

Comments on Aleck's Stress Distribution in Clamped Plates **AM 442**

Crack-Tip Stress and Strain Singularity in Thermally Loaded Elastic-Plastic Material **AM 438**

Critical Compressive Stress of a Beam-Column to a Second Order **AM 978**

Drag on a Droplet in Translating Fluctuating Flow **AM 436**

Effect of the External Load on the Thermoelastoplastic Creep Deformation **AM 429**

Effects of a Circular Hole on States of Uniform Twisting and Shearing in Shallow Spherical Shells **AM 674**

On an Elastic Theory of Friction **AM 438**

On the Error That Can Be Induced by an Ergodicity Assumption **AM 654**

Finite Elastic-Plastic Deformation of a Rotating Hollow Cylinder **AM 666**

Folding of Elastica-Similarity Solutions **AM 199**

Harmonic Waves in Fiber Reinforced Orthotropic Elastic Composites **AM 967**

How to Optimally Support a Plate **AM 207**

An Improvement of the Stress Calculations in Plane Elasticity by Use of Spline Functions **AM 972**

Inelastic Dynamic Response of Rectangular Plates by Finite Elements **AM 441**

The Influence of Random Longitudinal Vibration on Channel and Pipe Flows of a Slightly Non-Newtonian Liquid **AM 661**

Instability of a Damped Rotor Partially Filled With an Inviscid Liquid **AM 674**

Linear Spatial Stability of Developing Flow in a Parallel Plate Channel **AM 192**

Magnetohydrodynamic Boundary Layer on a Wedge **AM 656**

Note on the Energy-Release Rate for a Crack Starting From the Apex of a Wedge **AM 194**

Note on a Paper by Liu on the Scattering of Water Waves by a Pair of Semi-Infinite Barriers **AM 656**

Optimal Isolation of a Single-Degree-of-Freedom System With Quadratic-Velocity Damping **AM 676**

Pendulum With a Rotational Vibration **AM 200**

Planar Motion of a Rigid Body With a Friction Rotor **AM 205**

On Plastic Strain in Porous Materials **AM 976**

On the Polygon-Circle Paradox **AM 195**

A Procedure to Generate Liapunov Functional for Distributed Parameter Systems **AM 188**

On the Savart-Masson Effect **AM 426**

Similarity Solutions to the Nonisothermal, Two-Dimensional Squeezing Flow of a Viscous Fluid **AM 670**

Solution of Navier's Equation in Rotational Curvilinear Coordinates **AM 659**

Some Observations in the Behavior of Laminated Composite Beams **AM 431**

On the Space of Stress Invariants **AM 664**

Stability of a Heavy Column With an End Load **AM 668**

Stabilization of an Unstable Linear System by Parametric White Nosie **AM 198**

Stress Distribution Around a Circular Hole in Square Plates, Loaded Uniformly in The Plane, on Two Opposite Sides of the Square **AM 203**

The Vibrating Beam With Nonhomogeneous Boundary Conditions **AM 669**

Vibrations of Free Circular Plates Having Elastic Constraints and Added Mass Distributed Along Edge Segments **AM 196**

Viscoelastic Responses of Finite Bodies by Quadrature Form of Correspondence Principle **AM 206**

Brill, J. P. Experimental Study of Oil-Water Flow in Inclined Pipes (80-Pet-51) **ERT 56**; Experimental Study of Two-Phase Normal Slug Flow in a Pipeline-Riser Pipe System (80-Pet-35) **ERT 67**

Brind, R. J. Elastodynamic Stress-Intensity Factors for a Crack Near a Free Surface **AM 539**

Brinkman, C. R. An Explanation for the Effects of Hold Periods on the Elevated Temperature Fatigue Behavior of 2 1/4 Cr-1 Mo Steel **MT 7**

Briscoe, B. J. The Influence of Linear and Rotating Motions on the Friction of Polymers (80-C2/Lub-44) **L 503**; (D) **L 507**; (AC) **L 508**

Brittle Materials

The Continuous Damage Theory of Brittle Materials. Part 1: General Theory **AM 809**; Part 2: Uniaxial and Plane Response Modes **AM 816**

Brittle Pipes

Pneumatic Rupture of a Brittle Pipe: The Depressurization Transient Adjacent to the Ruptured Zone **PVT 287**

Brock, J. E. Stress Analysis of Axisymmetric Rotating Disks (TB) **MD 922**

Brombach, H. Flood Protection by Vortex Valves **DS 338**

Brown, D. H. An Evaluation of Steam Injected Combustion Turbine Systems (80-GT-51) **P 13**

Brown, F. T. Energy-Based Modeling and Quasi Coordinates **DS 5**

Brown, F. W. The Analytical and Experimental Evaluation of Resonant Response in High-Speed, Lightweight, Highly Loaded Gearing (80-C2/DET-22) **MD 346**

Brown, R. H. On the Mechanics of Chip Segmentation in Machining (80-WA/PROD-3) **I 33**; A Method of Analyzing the Three-Dimensional Stiffness Properties of the Intact Human Lumbar Spine (TB) **BE 299**; The Role of Microcracks in Large Plastic Deformation **I 431**

Brown, R. N. Friction Between High Speed Gear Coupling Teeth **MD 54**; (D) **MD 58**; (AC) **MD 59**

Brull, M. A. Parametric Instability of a Rotating Shaft Due to Pulsating Torque **AM 948**

Bruni, C. Volterra Series Expansion for Bilinear Systems in a Nonlinear Feedback Loop **DS 84**

Brust, F. W. A Computational Model of Backlay Welding for Controlling Residual Stresses in Welded Pipes **PVT 226**

Bryan, R. H. Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) **PVT 85**

Bryanston-Cross, P. J. Interferometric Measurements in a Turbine Cascade Using Image-Plane Holography (80-GT-91) **P 124**

Bryson, A. E., Jr. Rufus Oldenburger Medal **DS 167**

Bubble Dynamics

A Photographic Study of Cavitation in Jet Flow (D) (AC) **F 371**

Bubble Flux Density

Applicability of the Bubble Flux Density Concept (TN) **HT 175**

Bubble Nucleation

An Analytical and Experimental Investigation of Bubble Waiting Time in Nucleate Boiling **HT 673**

Bubbles

Bubble Growth During Decompression of a Liquid (79-HT-73) **HT 56**

A Note on the Effect of Short and Long Laminar Separation Bubbles on Desinent Cavitation **F 28**

Buchberg, H. Design Optimization of Sinusoidal Glass Honeycomb for Flat Plate Solar Collectors **SE 268**; Design and Testing of Thin Adiabatic Desiccant Beds for Solar Air Conditioning Applications **SE 89**

Buckled Panels

Reexamination of Stability of a Two-Dimensional Finite Panel Exposed to an Incompressible Flow **AM 472**

Buckley, D. H. The Adhesion, Friction, and Wear of Binary Alloys in Contact With Single-Crystal Silicon Carbide (80-C2/Lub-53) **L 180**

Buckling

Buckling of a Clamped-Hinged Circular Arch Under Gas Pressure and Related Problems (BN) **AM 425**

On the Buckling Design of Spherical Shells (81-PVP-32) **PVT 261**

Buckling of Polar Orthotropic Annular Plates Under Uniform Inplane Compressive Forces (DDM) **AM 643**

Elastic Instability of a Heated Annular Plate Under Lateral Pressure **AM 399**

On the Error That Can Be Induced by an Ergodicity Assumption (BN) **AM 654**

Experimental Determination of the Propagation Pressure of Circular Pipes (82-PVP-2) **PVT 328**

Buckling Loads

On the Analysis of Uniform Prismatic Columns (80-C2/DET-113) **MD 274**

Bui-Quoc, T. A Reinterpretation of the Palmgren-Miner Rule for Fatigue Life Prediction (D) **AM 445**; (AC) **AM 448**

Buoyancy

Laminar Mixed Convection in a Shrouded Fin Array **HT 559**

Buoyancy Components

Dense, Vertical Jets with Two Opposing Buoyancy Components **HT 135**

Buried Pipes

Passive Acoustic Detection of Gas Leaks in Buried Pipes (80-WA/NC-17) **I 314**

Phase Change Around Insulated Buried Pipes: Quasi-Steady Method **ERT 201**

Burners

Performance and Air Pollutant Emissions of an Experimental Water/Residual Oil Emulsion Burner in a Commercial Boiler **P 788**

Soot Formation in a Turbulent Swirl Stabilized Laboratory Combustor (80-GT-77) **P 49**

Burnout

Boiling Burnout During Crossflow over Cylinders, beyond the Influence of Gravity **HT 478**

Burns, A. Use of Lead/Lag Approximations in Modeling Thermal Regenerator Systems **DS 49**
Burns, D. J. Calculation of Contact Ratios for Plastic/Plastic or Plastic/Steel Spur Gear Pairs (80-C2/DET-105) **MD 528**
Burridge, R. *(editor)* Fracture Mechanics (BR) **MT 77**
Burrows, C. R. Active Vibration Control of a Flexible Rotor on Flexibly-Mounted Journal Bearings (81-WA/DSC-5) **DS 383**; A Comparison of Multifrequency Techniques for Measuring the Dynamics of Squeeze-Film Bearings (80-C2/Lub-46) **L 137**
Burstein, A. H. A Method of Analyzing the Three-Dimensional Stiffness Properties of the Intact Human Lumbar Spine (TB) **BE 299**; Structural Properties of Immature Canine Bone **BE 232**
Burton, R. A. *(author)* Thermal Deformation in Frictionally Heated Systems (BR) **L 164**; Thermoelastic and Dynamic Phenomena in Seals (80-C2/Lub-9) **L 253**
Burton, T. D. Influence of Wheel/Rail Contact Geometry on Large Amplitude Wheelset Equations of Motion **DS 211**
Bussolari, S. R. The Dynamic Response of Vascular Endothelial Cells to Fluid Shear Stress **BE 177**
Butosov, M. M. *(author)* Interferometry by Holography (BR) **AM 450**
Butterfly Valves
Torque Characteristics of a 122-Centimeter Butterfly Valve With a Hydro/Pneumatic Actuator **F 396**

C

Cable Bending
The Reduction of Capstan Effectiveness by Cable Bending Resistance (80-WA/OCE-2) **I 319**
Cables
The Natural Frequencies and Mode Shapes of Cables With Attached Masses (81-Pet-10) **ERT 237**
Torque and Stress Balanced Design of Helically Armored Cables (80-WA/OCE-1) **I 61**
Cage Speed
An Advanced Apparatus for the Study of Roller and Cage Slip in High-Speed Roller Bearings (80-C2/Lub-2) **L 46**
Cages
On the Traction Behavior of Several Lubricants (80-C2/Lub-15) **L 55**
Calcium Sulfonate
Antiwear Mechanism of ZDDP in the Presence of Calcium Sulfonate Detergent **L 486**; (D) **L 494, 495**; (AC) **L 495**
Calculation Method
A Method for the Calculation of 3D Boundary Layers on Practical Wing Configurations **F 104**
Calculators
Solar Energy Programs for HP-41 and TI-59 Calculators (BR) **SE 362**
Calderale, P. M. Thermal and Thermoelastic Analysis of Spheroidal Graphite Cast Iron and Light Alloy Pistons **MD 895**
California
The Potential for Industrial Energy Conservation in California **I 52**
Calistrat, M. M. Friction Between High Speed Gear Coupling Teeth (80-C4DET-5) **MD 54**
Call, P. J. The Effect of Receiver Optical Properties on Solar Thermal Electric Systems **SE 207**
Cam-Actuated Mechanisms
Analysis of a Pneumatically Coupled Cam-Actuated Mechanism **DS 290**
Cam-Followers
Residual Vibration Criteria Applied to Multiple Degree of Freedom Cam Followers (80-DET-3) **MD 702**
Cambered Bodies
Aerodynamic Effects of Shape, Camber, Pitch, and Ground Proximity on Idealized Ground-Vehicle Bodies **F 631**; (D) **F 637, 638**; (AC) **F 638**
Campbell, J., Jr. Closed-Cycle Gas Turbine Working Fluids (80-GT-135) **P 220**
Cams
Assessment of the Dynamic Quality of a Class of Dwell-Rise-Dwell Cams (80-DET-83) **MD 793**
Design and Evaluation of Drag-Link Driven Cams (80-DET-38) **MD 592**
Resonances and Instabilities in Dynamic Systems Incorporating a Cam **MD 914**
Canine Bone
Structural Properties of Immature Canine Bone **BE 232**
Cannon, N. S. A State Variable Analysis of Inelastic Deformation of Thin Walled Tubes **MT 305**
Canonical Coordinates
Instantaneous Kinematics of Multiple-Degree-of-Freedom Motions (80-DET-53) **MD 608**
Cantilever-Mounted Bearing
Dynamic Analysis of a Cantilever-Mounted Gas-Lubricatd Thrust Bearing (80-C2/Lub-32) **L 157**
Cantilever Pile
Dynamic Response of a Cantilever Pile to Vortex Shedding in Regular Waves **ERT 32**
Cantilevered Pipes
Dynamic Behavior of Continuous Cantilevered Pipes Conveying Fluid Near Critical Velocities (81-WA/APM-13) **AM 943**
Capacitance Measurements
Some Limitations in Applying Classical EHD Film Thickness Formulas to a High-Speed Bearing (80-C2/Lub-13) **L 295**; (D) (AC) **L 303**
Capital Costs
The Interrelation between Recurrent and Capital Costs in a Solar Thermal Process Heat System **SE 241**
Capstans
The Reduction of Capstan Effectiveness by Cable Bending Resistance (80-WA/OCE-2) **I 319**
Cardiovascular Function
Esophageal Accelerometer—Indicator of Cardiovascular Function **BE 160**
Cardiovascular System
Effect of Vessel Tapering on the Transition to Turbulent Flow: Implications in the Cardiovascular System **BE 116**
Cardou, A. Numerical Implementation of Complex Potentials for Gear Tooth Stress Analysis (80-C2/DET-86) **MD 460**
Carlson, R. D. Critical Heat Flux Experiments and Correlation in a Long, Sodium-Heated Tube **HT 74**
Carman, R. W. Ride Quality Analysis of Multi-Level Auto Rack Equipped Flat Cars (79-WA/RT-4) **I 241**
Carnes, T. N. Analytical Modeling of Wave Interference Directional Microphones (80-WA/NC-6) **I 361**
Carroll, H. B., Jr. Modeling of Hydraulically Fractured Gas Wells Completed in Noncontinuous Lenticular Formations **ERT 153**
Carroll, J. A. A Note on the Effect of Short and Long Laminar Separation Bubbles on Desinent Cavitation **F 28**; Observations of the Various Types of Limited Cavitation on Axisymmetric Bodies **F 415**
Carroll, M. M. On Plastic Strain in Porous Materials (BN) **AM 976**
Carter, W. J. Permeability Enhancement Using Explosive Techniques (80-Pet-70) **ERT 110**
Cascades
Boundary Layer Studies on Highly Loaded Cascades using Heated Thin Films and a Traversing Probe (80-GT-137) **P 237**
The Combined Effect of Axial Velocity Density Ratio and Aspect Ratio on Compressor Cascade Performance (80-GT-138) **P 247**
Forces on Staggered Airfoil Cascades in Unsteady In-Phase Motion **F 299**
Transonic Flow Computations in Cascades Using Finite Element Method (81-GT-4) **P 857**
Case Depth
Effects of Case Depth and Relative Radius of Curvature on Surface Durability of Case-Hardened Chromium Molybdenum Steel Roller (80-C2/DET-37) **MD 474**
Casey, J. On the Characterization of Strain-Hardening in Plasticity (81-APM-26) **AM 285**; A Correct Definition of Elastic and Plastic Deformation and Its Computational Significance (D) **AM 983**; (AC) **AM 984**
Casson Model Fluids
Laminar-Turbulent Transition in Pipeflow of Casson Model Fluids **ERT 318**
Castellani, G Rating Gear Strength (80-C2/DET-88) **MD 88**
Castelli, V. Dynamic Characteristics of a High-Speed Rotor With Radial and Axial Foil-Bearing Supports (80-C2/Lub-35) **L 361**; (D) **L 370, 371**; (AC) **L 371**
Castelli, V. P. Rating Gear Strength (80-C2/DET-88) **MD 516**
Castro, I. P. Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (D) (AC) **F 372**
Catalytic Ceramic Element
Preliminary Design Analysis of a Catalytic Ceramic Structure in a Turbine Combustor (78-WA/GT-10) **P 338**
Catamarans
Analysis of Motions of a Catamaran in Arbitrary Heading Waves **ERT 219**
Caughey, T. K. *(reviewer)* Dynamical Systems and Evolution Equations: Theory and Applications (BR) **AM 450**; Optimum Pulse Control of Flexible Structures **AM 619**
Caustics
The Effect of Crack-Tip Plasticity on the Determination of Dynamic Stress-Intensity Factors by the Optical Method of Caustics **AM 302**
Cavitation
A Cavitation Algorithm (80-C2/Lub-54) **L 350**; (D) (AC) **L 354**
Cavitation Inception in Spool Valves **F 584**; (D) **F 575**; (AC) **F 576**
Cavitation in a Short Bearing With Pressurized Lubricant Supply (80-C2/Lub-47) **L 337**; (D) **L 346**; (AC) **L 347**
A Comparison of Two Optical Techniques for Measuring Cavitation Nuclei **F 8**
Correlations of Thermodynamic Effects for Developed Cavitation **F 534**
The Effect of Secondary Vorticity on the Inception of Vortex Cavitation **F 19**
On the Equilibrium of Cavitation Nuclei in Liquid-Gas Solutions **F 425**; (D) (AC) **F 430**
Inception of Cavitation From a Backward Facing Step **F 288**
A Photographic Study of Cavitation in Jet Flow **F 14**; (D) **F 370**; (AC) **F 371**
A Possible Criterion for Cavitation Inception on Hemispherical Headforms **F 577**
Prediction of Gaseous Cavitation Occurrence in Various Liquids Based on Two-Phase Flow Analogy **F 551**
Scale Effects on Various Types of Limited Cavitation **F 405**; (D) (AC) **F 414**
Uncoupling Approximations in Fluid-Structure Interaction Problems With Cavitation **AM 753**
Viscous Effects in the Inception of Cavitation **F 280**
Cavitation Inception
Cavitation Inception Observations on Six Axisymmetric Headforms **F 273**; (D) (AC) **F 279**
Cavitation Inception Tests on Axisymmetric Headforms **F 288**
The Initiation of Gaseous Microbubble Growth In Laminar Separation Bubbles **F 543**; (D) (AC) **F 549**
Cavitation Nuclei
The Effect of Nuclei on the Inception of Bubble and Sheet Cavitation on Axisymmetric Bodies **F 557**
Cavities
A Methodology of Predicting Cavity Geometry Based on the Scanned Surface Temperature Data—Prescribed Heat Flux at the Cavity Side (79-WA/HT-45) **HT 42**
Cell Mapping
A Generalized Theory of Cell-to-Cell Mapping for Nonlinear Dynamical Systems (81-WA/APM-25) **AM 634**
Center-Cracked Panel
Ductile Tearing Instability of a Center-Cracked Panel of an Elastic-Plastic Strain Hardening Material **MT 46**
Central Receiver Test Facility
Heliostat Characterization at the Central Receiver Test Facility **SE 82**
Central Receivers
High-Flux Solar Absorber Concept for Central Receiver Power Plants **SE 52**
Centrifugal Blowers
On the Pressure Losses Due to the Tip Clearance of Centrifugal Blowers (80-GT-139) **P 271**

Centrifugal Compressors
Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) **F 391**; (D) (AC) **F 395**
Flow Instability at the Inlet of a Centrifugal Compressor **P 451**
Rotordynamic Instability in Centrifugal Compressors—Are All the Excitations Understood? (80-GT-149) **P 288**
Centrifugal Fans
Measurements of the Mean Flow Velocity and Velocity Fluctuations at the Exit of an FC Centrifugal Fan Rotor **P 393**
Centrifugal Forces
Centrifugal Effects in Thrust Bearings and Seals Under Laminar Conditions (80-C2/Lub-21) **L 126**
Centrifugal Impellers
Calculations of Three-Dimensional, Viscous Flow and Wake Development in a Centrifugal Impeller **P 367**
Capturearu, G. *(author)* Lagare Cu Alunecare (Sliding Bearings) **L 319**
Ceranoglu, A. N. Propagation of Elastic Pulses and Acoustic Emission in a Plate Part 1: Theory (81-APM-4) **AM 125**; Part 2: Epicentral Responses (81-APM-5) **AM 133**; Part 3: General Responses (81-APM-6) **AM 139**
Cervantes de Gortari, J The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-13) **F 119**; (D) (AC) **F 126**
Cha, Y. S. Bubble Growth During Decompression of a Liquid (79-HT-73) **HT 56**; On the Equilibrium of Cavitation Nuclei in Liquid-Gas Solutions **F 425**; (D) (AC) **F 430**
Chaddock, J. B. Drag Calculations for Vehicles in Very Long Tubes From Turbulent Flow Theory **F 361**
Chaidar, S. Effect of Corrugated Cover Directional Transmittance on the Thermal Performance of a Solar Collector **SE 144**
Chain-Like Structures
An Exact Condensation Procedure for Chain-Like Structures Using a Finite Element-Transfer Matrix Approach (80-C2/DET-123) **MD 295**
Challenger, K. D. An Explanation for the Effects of Hold Periods on the Elevated Temperature Fatigue Behavior of 2 1/4 Cr-1 Mo Steel **MT 7**
Chambers, A. K. A Furnace Wall Ash Monitoring System for Coal Fired Boilers (80-WA/Fu-1) **P 532**
Chamfer Corners
Approximate Elastic Stresses in Pipe Junctions with Chamfer Corners (TB) **PVT 107**
Chamis, C. C. Superhybrid Composite Blade Impact Studies (81-GT-24) **P 731**
Chan, A. M. C. Refilling and Rewetting of a Hot Horizontal Tube. Part III: Application of a Two-Fluid Model to Analyze Rewetting **HT 653**
Chan, D. P. Creep Relaxation of Fuel Pin Bending and Ovalling Stresses (80-C2/NE-24) **P 621**
Chan, P. C. T. The Effect of Gravity on Certain Curved Channel Potential Flows (81-FE-19) **F 639**
Chand, S. Design Formulas for Expansion Bellows **MD 881**
Chandler, F. O. The Development and Testing of the Space Shuttle Reaction Control System (78-WA/Aero-20) **I 137**
Chang, C. N. An Evaluation of Steam Injected Combustion Turbine Systems (80-GT-51) **P 13**; (D) **P 17**; (AC) **P 18**
Chao, W. C. Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) **AM 371**
Chaplin, J. R. On the Irrotational Flow Around a Horizontal Cylinder in Waves (81-WA/APM-18) **AM 689**
Chapman, M. C. A Detailed Transient Model of an OTEC Evaporator **P 539**
Chato, J. C. Reflections on the History of Heat and Mass Transfer in Bioengineering **BE 97**
Chatter
Behavior of Self-Excited Chatter Due to Multiple Regenerative Effect **I 324**
Chattoraj, D. Critical Compressive Stress of a Beam-Column to a Second Order (BN) **AM 978**
Chawla, T. C. Effective Thermal Conductivity for Combined Radiation and Free Convection in an Optically Thick Heated Fluid Layer **HT 114**
Check Valves
Development of Affinity Relations for Modeling Characteristics of Check Valves (80-Pet-36) **ERT 196**
Chemical Reactors
Enzyme Engineering, Future Directions (BR) **BE 217**
Chemical Transformations
Antiwear Mechanism of ZDDP in the Presence of Calcium Sulfonate Detergent **L 486**; (D) **L 494, 495**; (AC) **L 495**
Chemistry
Role of Chemistry in the Lubrication of Concentrated Contacts **L 473**
Chen, A. C. T. Ice Pressure Sensor Inclusion Factors **ERT 82**
Chen, E. P. Transient Response of a Finite Crack in a Strip With Stress-Free Edges (D) **AM 681**; (AC) **AM 682**
Chen, F. F. A Horizontal Flow Past a Partially Heated, Infinite Vertical Cylinder **HT 546**
Chen, F. Y. Assessment of the Dynamic Quality of a Class of Dwell-Rise-Dwell Cams (80-DET-83) **MD 793**
Chen, H. M. Fan/Foundation Interaction—A Simplified Calculation Procedure **P 805**
Chen, J. H. Factors Affecting Fatique Strength of Nylon Gears (80-C2/DET-104) **MD 543**
Chen, M. M. Microconvective Thermal Conductivity in Disperse Two-Phase Mixtures as Observed in a Low Velocity Couette Flow Experiment **HT 47**; Pulse-Decay Method for Measuring the Thermal Conductivity of Living Tissues **BE 246**
Chen, S. S.
Flow Velocity Dependence of Damping in Tube Arrays Subjected to Liquid Cross-Flow **PVT 130**
Cheng, G. L. Biomechanical and Neurological Response of the Spinal Cord of a Puppy to Uniaxial Tension (Er) **BE 279**
Cheng, H. S. A Numerical Solution to the Dynamic Load, Film Thickness, and Surface Temperatures in Spur Gears, Part I Analysis **MD 177**; Part II Results **MD 188**
Cheng, K. C. An Experimental Investigation of Ice Formation around an Isothermally Cooled Cylinder in Crossflow **HT 733**
Cheng, R. M. H. Analysis of a Pneumatically Coupled Cam-Actuated Mechanism **DS 290**
Cheng, S. A Diagonally Dominant Solution for the Cylinder End Problem (81-WA/APM-12) **AM 876**
Chern, S. Y. Laminar Free Convection Boundary Layer Heat Transfer over Non-Isothermal Surface (TN) **HT 819**
Cheung, F. B. Effective Thermal Conductivity for Combined Radiation and Free Convection in an Optically Thick Heated Fluid Layer **HT 114**
Cheung, Y. K. Amplitude Incremental Variational Principle for Nonlinear Vibration of Elastic Systems (81-WA/APM-26) **AM 959**
Chiang, F. P *(reviewer)* Interferometry by Holography (BR) **AM 450**
Chiang, T. Critical Heat Flux Experiments and Correlation in a Long, Sodium-Heated Tube **HT 74**
Chien, S. Vesicle Transport in Arterial Endothelium and the Influence of Mechanical Factors on Macromolecular Permeability **BE 186**
Chillers
Design Improvements in LiBr Absorption Chillers for Solar Applications **SE 56**
Chin, B. A. Multispecimen Fatigue Crack Propagation Testing **MT 240**
Chin, W. C. Direct Approach to Aerodynamic Design Problems **AM 721**
Chip Formation
Some Investigations Into Machining With Driven Rotary Tools **I 469**
Chip Segmentation
On the Mechanics of Chip Segmentation In Machining (80-WA/PROD-3) **I 33**
Cho, C. W. A Phenomenological Model for Transient Deformation Based on State Variables **MT 314**
Cho, U. W. Creep and Creep Recovery of 304 Stainless Steel at Low Stresses With Effects of Aging on Creep and Plastic Strains (81-WA/APM-17) **AM 785**
Cholesterol
Issues and Current Studies (BR) **BE 217**
Chou, D. C. Sound Transmission Through a Cylindrical Pipe Wall (80-WA/NC-3) **I 355**
Chou, T. W. Stress Field Due to a Cylindrical Inclusion With Constant Axial Eigenstrain in an Infinite Elastic Body **AM 853**
Chow, J. G. Y. Development of a Procedure for Estimating the High Cycle Fatigue Strength of Some High Temperature Structural Alloys **MT 97**
Chow, W. L. The Effect of Gravity on Certain Curved Channel Potential Flows (81-FE-19) **F 639**; The Study of Sluice Gate and Sharp-Crested Weir Through Hodograph Transformations (81-APM-23) **AM 229**
Christensen, R. M. *(reviewer)* Rheology (BR) **AM 450**
Christoffersen, J. A Micromechanical Description of Granular Material Behavior **AM 339**
Chrome Oxide Coatings
Structural and Compositional Characterization of RF Sputter-Deposited Ni-Cr + Cr_2O_3 Films (80-C2/Lub-31) **L 211**
Chromium Carbide
The Wear of a Chromium Carbide Hard Facing: The Effect of High Gas Pressure on Wear Transitions (80-C2/Lub-5) **L 228**
Chrysler, G. M. Natural Convection Heat Transfer Coefficients for a Short Horizontal Cylinder Attached to a Vertical Plate **HT 630**
Chu, F. H. A Direct Integration Technique for the Transient Analysis of Rotating Shafts **MD 244**
Chuang, J. C. Implementation of Solution Rectification Techniques in an Interactive Linkage Synthesis Program (80-DET-91) **MD 657**
Chung, J. S. *(reviewer)* Europe's Offshore Oil & Gas (BR) **ERT 200**; McGraw-Hill Encyclopedia of Energy (BR) **ERT 200**; Nonlinear Static Analysis of Deep Ocean Mining Pipe—Part I: Modeling and Formulation (80-Pet-48) **ERT II**; Part II: Numerical Studies (80-Pet-49) **ERT 16**; Nonlinear Transient Motion of Deep Ocean Mining Pipe **ERT 2**; Technical Editor's Page **ERT 109**; **ERT 189**; **ERT 261**; Vibrations of Long Marine Pipes due to Vortex Shedding (81-Pet-29) **ERT 231**; (ER) **ERT 290**
Cipra, R. J. On the Dynamic Simulation of Large Nonlinear Mechanical Systems. Part I: An Overview of the Simulation Technique. Substructuring and Frequency Domain Considerations (80-DET-66) **MD 849**; Part 2: The Time Integration Technique and Time Response Loop (80-DET-67) **MD 857**
Circular-Arc Gears
Conformity Factor In Wildhaber-Novikov Circular-Arc Gears (80-C2/DET-15) **MD 134**
Circular Arch
Buckling of a Clamped-Hinged Circular Arch Under Gas Pressure and Related Problems (BN) **AM 425**
Circular Blanks
Complete Numerical Solution of the Axisymmetrical Deep-Drawing Problem (81-WA/Mat-1) **MT 326**
Circular Cylinders
Phase Change around a Circular Cylinder **HT 598**
Pressure and Vortex Shedding Patterns Around a Low Aspect Ratio Cylinder in a Sheared Flow at Transitional Reynolds Numbers **F 88**; (D) **F 95**; (AC) **F 96**
Circular Holes
Effects of a Circular Hole on States of Uniform Twisting and Shearing in Shallow Spherical Shells (BN) **AM 674**
Plane Elastic Waves Generated by Dynamical Loading Applied to Edge of Circular Hole (81-WA/APM-4) **AM 577**
Stress Concentrations in Cylindrically Orthotropic Composite Plates With a Circular Hole **AM 583**
Stress Distribution Around a Circular Hole in Square Plates, Loaded Uniformly in the Plane, on Two Opposite Sides of the Square (BN) **AM 203**
Circular Inclusion
Crack Path Prediction for a Kinked Crack in the Neighborhood of a Circular Inclusion in an Infinite Medium (81-APM-31) **AM 313**
Circular Metal Plates
Analytical Puncture Study of Circular Metal Plates

(D) PVT 206

Circular Pipes
Experimental Determination of the Propagation Pressure of Circular Pipes (82-PVP-2) PVT 328

Circular Plates
Vibration of an Elastic Circular Plate on an Elastic Half Space—A Direct Approach AM 161

Circular Rings
On the Nonbuckling of a Circular Ring Under "Wrapping" Loading (D) AM 682

Circular Rods
Acoustic Loading Effects on Oscillating Rod Bundles (80-C2/PVP-124) PVT 322

Circular Saws
Circular Saw Vibration Control by Induction of Thermal Membrane Stresses (80-WA/PROD-8) I 81

Circular Tubes
Convective Heat Transfer to Turbulent Dropiet Flow in Circular Tubes HT 679
Effect of Plenum Length and Diameter on Turbulent Heat Transfer in a Downstream Tube and on Plenum-Related Pressure Losses HT 415
A Numerical Study of Nonaxisymmetric Stokesian Flow in a Circular Tube (81-WA/APM-16) AM 459

Circulation
Location of Early Atheroma in the Human Coronary Arteries BE 208

Circumferential Flaw
Ductile Fracture of Pipes and Cylindrical Containers With a Circumferential Flaw PVT 160

Clad Steel Plates
Fatigue Crack Growth Behavior of Explosively-Bonded Clad Steel Plates MT 36

Cladding Materials
Pellet-Cladding Interaction of LMFBR Fuel Elements at Unsteady State P 627

Clamped Plates
Comments on Aleck's Stress Distribution in Clamped Plates (BN) AM 442

Clark, A. V., Jr. Calculation of the Response of an Impulsively Excited Oscillator in an Infinite Acoustic Fluid AM 749

Clark, J. E. Design and Testing of Thin Adiabatic Desiccant Beds for Solar Air Conditioning Applications SE 89

Classical EHD Formulas
Some Limitations in Applying Classical EHD Film Thickness Formulas to a High-Speed Bearing (80-C2/Lub-13) L 295; (D) L 302; (AC) L 303

Classical Mechanics
Optimization of High Speed Geneva Mechanisms (80-DET-56) MD 621

Clausing, A. M. The Influences of Property Variations on Natural Convection from Vertical Surfaces HT 609

Clayton, D. L. Polycarbonate Plastic Inserts for Spherical Acrylic Plastic Shells Under Hydrostatic Loading I 90

Cleaning Mediums
Water Tempered Cleaning Medium for Soot-blowers P 561

Clearance Control
Application of Abrasive Coatings to Clearance Control in the Gas Turbine (D) P 602; (AC) P 603

Clearances
Laser-Optical Blade Tip Clearance Measurement System P 457

Closed Kinematic Chains
Control of Force Distribution in Robotic Mechanisms Containing Closed Kinematic Chains DS 134

Closed Loop Systems
Analysis of Mechanisms and Robot Manipulators (BR) AM 214

Closure
Closure Equations for a Six-Link Coupler-Drive Mechanism MD 236

Cloutman, L. D. The Influence of Swirl on the Flow Characteristics of a Reciprocating Piston-Cylinder Assembly (D) (AC) F 180, 181

CNC Systems
Reference-Pulse Circular Interpolators for CNC Systems (80-WA/PROD-7) I 131

Coal Burning
A New Approach for Erosion Prediction Due To Fly Ash (80-GT-96) P 285

Coal Conversion
Commercial Scale Equipment for Coal Conversion Processes ERT 186

Coal Cutting
An Investigation of the Mechanics and Noise Associated with Coal Cutting (80-WA/NC-1) I 257

Coal-Derived Liquids
Effect of Sodium, Potassium, Magnesium, Calcium, and Chlorine on the High Temperature Corrosion of in-100, U-700, IN-792, and MAR M-509 (80-GT-150) P 294

Coal Fired Boilers
A Furnace Wall Ash Monitoring System for Coal Fired Boilers (80-WA/Fu-1) P 532

Coal Gasification
Field Results From a Linked Vertical Well UCG Test in Deep, Thin-Seam Bituminous Coal ERT 277

Coal Gasification Systems
The Thermodynamic Performance of Two Combined Cycle Power Plants Integrated with Two Coal Gasification Systems P 572

Coal Slurry Transportation
Long-Distance, High-Volume Transport of Coal by Slurry Pipeline (80-WRK/Pet-1) ERT 322

Coastdown Testing
Evaluation of Vehicle Drag Parameters From Coast-down Experiments Conducted Under Nonideal Environmental Conditions F 133; (D) F 140; (AC) F 141

Coatings
Low-Pressure Plasma-Spray Coatings for Hot-Corrosion Resistance (80-GT-98) P 146
Structural and Compositional Characterization of RF Sputter-Deposited Ni-Cr + Cr_2O_3 Films (80-C2/Lub-31) L 211

Coaxial Jets
Initial Region of Subsonic Coaxial Jets of High Mean-Velocity Ratio F 335

Cochran, R. P. Temperature and Pressure Measurement Techniques for an Advanced Turbine Test Facility P 468

Codes
Recent Advances in the ASME Section VIII Division 1 and 2 Pressure Vessel Codes PVT 119
Thoughts on a Code of Practice for Forged High-Pressure Vessels of Monobloc Design PVT 2
TRANS2A: An Unconditionally Stable Code for Thermal Transient Stress Analysis in Piping PVT 50

Coe, H. H. Calculated and Experimental Data for a 118-mm Bore Roller Bearing to 3 Million DN (80-C2/Lub-14) L 274; (D) L 281; (AC) L 283

Cohen, H. Boundary Condition Independence in Coupled Thermoelasticity (BN) AM 974; Planar Motion of a Rigid Body With a Friction Rotor (BN) AM 205

Coherent Structures
Search for Large-Scale Coherent Structures in the Nearly Self-Preserving Region of a Turbulent Axisymmetric Jet F 503

Cohesionless Granular Material
A Micromechanical Description of Granular Material Behavior AM 339

Cohn, A. An Evaluation of Steam Injected Combustion Turbine Systems (80-G T-51) P 13

Cohn, M. Z. *(editor)* Engineering Plasticity by Mathematical Programming (BR) MT 77

Coiled Journal Bearing
Dynamic Characteristics of a High-Speed Rotor With Radial and Axial Foil-Bearing Supports (80-C2/Lub-35) L 381; (D) L 370, 371; (AC) L 371

Coils
Critical Heat Flux in Helically Coiled Tubes HT 660

Cole, J. D. *(reviewer)* Similarity, Self-Similarity and Intermediate Asymptotics (BR) AM 213

Coleman, H. W. Heat Transfer in the Accelerated Fully Rough Turbulent Boundary Layer HT 153

Coleman, W. The Efficiency of Involute Spur Gears MD 160; (D) (AC) MD 169

Collectors
A Model of Lubrication Filtration (80-C2/Lub-20) L 81

Colliding Bodies
Moments Between Impacting Rigid Bodies MD 812

Collier, S. L. Development of Affinity Relations for Modeling Characteristics of Check Valves (80-Pet-36) ERT 196

Columns
On the Analysis of Uniform Prismatic Columns (80-C2/DET-113) MD 274

Combined Cycles
The Thermodynamic Performance of Two Combined Cycle Power Plants Integrated with Two Coal Gasification Systems P 572

Combined Stress
Fatigue Criteria Under Combined Stresses or Strains MT 82

Combustion
The CIVIC—A Concept in Vortex Induced Combustion, Part II (81-GT-12) P 708
The Civic: A Concept in Vortex Induced Combustion for the Solar Gemini 10 kW Gas Turbine (80-GT-54) P 34
Potential Advantages to Water Jet Drilling for Use in In-Situ Coal Gasification Processes (80-Pet-76) ERT 147

Combustion Chambers
Calculation of Windmilling Characteristics of Turbojet Engines (80-GT-50) P 1
A Mathematical Model for Heat Transfer in Combustion Chambers of Steam Generators P 545

Combustion Systems
Pattern Factor Improvement in the F-100 Primary Combustion System (81-GT-25) P 739

Combustion Turbine Systems
An Evaluation of Steam Injected Combustion Turbine Systems (80-GT-51) P 13

Combustion Turbines
Ten Years of Digital Computer Control of Combustion Turbines (80-GT-78) P 54

Combustors
The Civic: A Concept in Vortex Induced Combustion for the Solar Gemini 10 kW Gas Turbine (80-GT-54) P 34
An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) P 759
The Interrelationship between Soot and Fuel NO_x Control in Gas Turbine Combustors (80-GT-76) P 43
Preliminary Design Analysis of a Catalytic Ceramic Structure in a Turbine Combustor (78-WA/GT-10) P 338
Soot Formation in a Turbulent Swirl Stabilized Laboratory Combustor (80-GT-77) P 49

Commercial Boilers
Performance and Air Pollutant Emissions of an Experimental Water/Residual Oil Emulsion Burner in a Commercial Boiler P 788

Comninou, M. An Educational Elasticity Problem With Friction. Part I: Loading, and Unloading for Weak Friction (81-WA/APM-19) AM 841; Heat Conduction Through a Flat Punch AM 871; Planar Hertz Contact With Heat Conduction AM 549

Compact Bone
Transient Study of Couple Stress Effects in Compact Bone: Torsion BE 275

Compensated Systems
Design and Evaluation of Drag-Link Driven Cams (80-DET-38) MD 592

Complex Flows
Complex Turbulent Flows: Comparison of Computation and Experiment F 184

Complex Potentials
Numerical Implementation of Complex Potentials for Gear Tooth Stress Analysis (80-C2/DET-86) MD 460

Complex Shaped Workpieces
Tooling Design for ECM—A Finite Element Approach (80-WA/Prod-9) I 183

Compliant Motions
Hybrid Positions/Force Control of Manipulators DS 126

Compliant Surface Mechanism
Rubber Surface Squeeze Film (80-C2/Lub-33) L 398; (D) (AC) L 404

Component Behavior
Creep Analysis (BR) AM 451

Composite Beams
On the Stability of a Composite Beam With Initial Stress to Moving Loads (81-APM-25) AM 388

Composite Materials
Analysis and Performance of Fiber Composites

(BR) **AM 213**
Glass Reinforced Plastic in Construction: Engineering Aspects By Leonard Halloway (BR) **MT 78**
Nonlinear Viscoelastic Analysis of a Unidirectional Composite Material (81-WA/APM-15) **AM 859**
Some Observations in the Behavior of Laminated Composite Beams (BN) **AM 431**

Compound Hybrid Systems
Compound Hybrid Geothermal-Fossil Power Plants: Thermodynamic Analyses and Site-Specific Applications **P 797**

Compressible Crossflow
The Linear Instability Due to the Compressible Crossflow on a Swept Wing (D) (AC) **F 179**

Compressible Fluids
Historical Review of Real-Fluid Isentropic Flow Models (79-WA/FM-1) **F 258**

Compression
Computation of the Turbulent Flow in an Internal Combustion Engine During Compression **F 75**
Design Nomographs of Compression Helical Springs for Predetermined Reliability Levels (80-C2/DET-85) **MD 268**
Effects of Nonlinear Strain-Dependent Permeability and Rate of Compression on the Stress Behavior of Articular Cartilage **BE 61**

Compressor Cascades
The Combined Effect of Axial Velocity Density Ratio and Aspect Ratio on Compressor Cascade Performance (80-GT-138) **P 247**
The Effect of the Axial Velocity Density Ratio on the Aerodynamic Coefficients of Compressor Cascades (80-GT-134) **P 210**

Compressor Rotors
Structure and Decay Characteristics of Turbulence in the Near and Far-Wake of a Moderately Loaded Compressor Rotor-Blade (80-GT-95) **P 131**

Compressors
A Blockage Model for Centrifugal Compressor Impellers (81-GT-11) **P 698**
Computation of Supercritical Compressor and Turbine Cascades with a Design Method for Transonic Flows (D) (AC) **P 804**
Investigations of an Axial Compressor End-Wall Boundary Layer Prediction Method (80-GT-53) **P 20**
Stalling Pressure Rise Capability of Axial Flow Compressor Stages (81-GT-3) **P 645**
Thermodynamics of a Hermetic Reciprocating Refrigeration Compressor With MCCT-Piston and Valve System (80-C2/DET-84) **MD 310**

Computational Algorithm
A Cavitation Algorithm (80-C2/Lub-54) **L 350**; (D) (AC) **L 354**

Computational Techniques
Computational Fluid Dynamics (BR) **F 367**; Computational Fluid Dynamics, Vol. 2 (BR) **F 367**

Computer Code
Pressure Transient Analysis of Elbow-Pipe Experiments Using the PTA-2 Computer Code (80-C2/PVP-22) **PVT 33**

Computer Modeling
Dynamic System Response Technology Transfer Via Computer Modeling (80-C2/DET-80) **MD 281**

Computer Programs
Calculated and Experimental Data for a 118-mm Bore Roller Bearing to 3 Million DN (80-C2/Lub-14) **L 274**; (D) **L 281**; (AC) **L 283**
Dynamic Continuous Path Synthesis of Industrial Robots Using ADAMS Computer Program (80-DET-41) **MD 602**
Panel on Computer Program Verification and Qualification **PVT 209**
Structural Mechanics Software Series—Vol. II (BR) **MD 556**
TRANS2A: An Unconditionally Stable Code for Thermal Transient Stress Analysis in Piping **PVT 50**

Computers
Performance of Computer-Optimized Tapered-Roller Bearings to 2.4 Million DN (80-C2/Lub-18) **L 13**
Ten Years of Digital Computer Control of Combustion Turbines (80-GT-79) **P 54**

Concentrated Contacts
Role of Chemistry in the Lubrication of Concentrated Contacts **L 473**

Concentrated Force
Propagation of Elastic Pulses and Acoustic Emission in a Plate Part I: Theory (81-APM-4) **AM 125**; Part 2: Epicentral Reponses (81-APM-5) **AM 133**; Part 3: General Reponses (81-APM-6) **AM 139**

Condé, J. F. G. The Control of Hot Corrosion in Marine Gas Turbines (80-GT-126) **P 188**

Condensation
An Exact Condensation Procedure for Chain-Like Structures Using a Finite Element-Transfer Matrix Approach (80-C2/DET-123) **MD 295**

Condensers
Optimized Performance of Condensers with Outside Condensing Surfaces **HT 96**

Conduction
Conduction of Heat Across Rectangular Cellular Enclosures **HT 591**
Conduction Shape Factors for Certain Multi-Hole Prismatic Bars (TN) **HT 821**
Numerical Solution to a Two-Dimensional Conduction Problem Using Rectangular and Cylindrical Body-Fitted Coordinate Systems **HT 753**

Conduction Control
The Transition from Natural-Convection-Controlled Freezing to Conduction-Controlled Freezing **HT 7**

Conformal Gears
Tooth Bearing Analysis and Surface Durability of Symmetrical Conformal Gears **MD 141**

Conformity Factor
Conformity Factor In Wildhaber-Novikov Circular-Arc Gears (80-C2/DET-15) **MD 134**

Conical Diffusers
REVIEW: Effects of Inlet Conditions on Conical-Diffuser Performance **F 250**

Conical Gears
Table Sliding Taper Hobbing of Conical Gear Using Cylindrical Hob. Part I: Theoretical Analysis of Table Sliding Taper Hobbing **I 446**; Part 2: Hobbing of Conical Involute Gear **I 452**

Conical Penetrators
Closed-Form Approximations for Forces on Conical Penetrators Into Dry Porous Rock **AM 971**
A Model to Estimate Forces on Conical Penetrators Into Dry Porous Rock (81-APM-15) **AM 25**

Connecting Fins
Performance of Storage Walls with Highly Conductive Covering Plates and Connecting Fins **SE 201**

Connolly, J. M. Performance of Storage Walls with Highly Conductive Covering Plates and Connecting Fins **SE 201**

Conry, T. F. An Analytical Solution for the Normal Load Carrying Capacity of Lightly Loaded Cylinders in Combined Rolling, Sliding and Normal Motion (TB) **L 467**; Thermal Effects on Traction in EHD Lubrication **L 533**

Conservation
The Potential for Industrial Energy Conservation in California **I 52**
Second Law Analysis and Synthesis of Solar Collector Systems **SE 23**

Conservation Integrals
Nondestructive Evaluation of the *J* and *M* Integrals (80-APM-2) **AM 83**

Conserving Energy
Conserving Energy in Saudi Arabia **P 519**

Constant Load
Simplified Fatigue Life Analysis for Traction Drive Contacts (80-C2/DET-40) **MD 430**; (D) **MD 438**; (AC) **MD 439**

Constant Speed
Analysis of Motions of a Catamaran in Arbitrary Heading Waves **ERT 219**

Constantinescu, V. N. *(author)* Lagare Cu Alunecare (Sliding Bearings) (BR) **L 319**

Constitutive Relations
A Comparison of Constitutive Relations Incorporating Strain-Rate Hardening (TB) **MT 261**
Rheology (BR) **AM 450**

Construction
Glass Reinforced Plastic in Construction: Engineering Aspects By Leonard Halloway (BR) **MT 78**

Contact Loss
Loss of Contact in the Vicinity of a Right-Angle Corner for a Simply Supported, Laterally Loaded Plate (81-WA/APM-11) **AM 597**

Contact Operations
Near-Contact Explosive Forming **PVT 368**

Contact Pressures
Contact Pressures on Closely Conforming Elastic Bodies **AM 543**
A Method to Measure Contact Pressure Between Metallic Surfaces by Changes in Surface Roughness (80-WA/Prod-18) **I 210**

Contact Stress
Further Studies of the Interface Boundary Conditions for Bolted Flanged Connections **PVT 240**
Laboratory Investigation of Wheel Rail Contact Stresses for U.S. Freight Cars (80-WA/RT-8 **I 246**

Contacting Finite Regions
Quasi-Steady-State Temperature Distribution in Periodically Contacting Finite Regions **HT 739**

Contamination
Surface Contamination, Rejuvenation, and the Reproducibility of Results in Nucleate Pool Boiling **HT 453**

Continuous Path
Dynamic Continuous Path Synthesis of Industrial Robots Using ADAMS Computer Program (80-DET-41) **MD 602**

Continuous-Time Filtering Problems
Discrete-Time Equivalent of Continuous-Time Filtering Processes **DS 417**

Continuum Mechanics
B. M. Fraeijs de Veubeke Memorial Volume of Selected Papers (BR) **AM 684**

Contrary Screws
An Extension of Screw Theory (80-DET-20) **MD 725**

Control Systems
The Development and Testing of the Space Shuttle Reaction Control System (78-WA/Aero-20) **I 137**
Experimental Results in the Modeling and Control of a Small Furnace **DS 370**
Model Reference Adaptive Controllers and Stochastic Self-Tuning Regulators—A Unified Approach **DS 404**

Controlled Media
Near-Contact Explosive Forming **PVT 368**

Convection
On a Bénard Convection in the Presence of Dielectrophoretic Forces (BN) **AM 980**
A Closed-Form Analytical Solution for Freezing Adjacent to a Plane Wall Cooled by Forced Convection (TN) **HT 596**
Combined Free and Forced Convection in Vertical Tubes with Radial Internal Fins **HT 566**
Developing Laminar Free Convection in an Open Ended Vertical Annulus with a Rotating Inner Cylinder **HT 552**
Dispersion in Laminar Flow Through Tubes by Simultaneous Diffusion and Convection **AM 217**
A Finite-Element Singular-Perturbation Technique for Convection-Diffusion Problems—Part I: The One-Dimensional Case **AM 265**; Part 2: Two-Dimensional Problems **AM 272**
Laminar Mixed Convection in a Shrouded Fin Array **HT 559**
A Methodology of Predicting Cavity Geometry Based on the Scanned Surface Temperature Data—Prescribed Heat Flux at the Cavity Side (79-WA/HT-45) **HT 42**
Natural Convection from a Horizontal Cylinder — Laminar Regime **HT 522**
Transient Natural Convection Heat Transfer of Water with Maximum Density Effect and Supercooling (80-HT-74) **HT 528**

Convective Heat Transfer
Convective Heat Transfer to Turbulent Droplet Flow in Circular Tubes **HT 679**
Pioneering Contributions to Our Knowledge of Convective Heat Transfer (80-HT-137) **HT 409**

Cooling
Cooling of Freely Falling Liquid Drops with a Shell of an Immiscible Volatile Liquid **HT 508**
A General Theory of Wet Surface Heat Exchangers and its Application to Regenerative Evaporative Cooling **HT 579**
Mathematical Formulation of Cooling Water Flow Rates for High Speed Continuous Slab Caster (80-C2/DET-111) **MD 318**

Cooling Loads
Mathematical Model for Design Conditions for

Cooling Load Calculations (80-C2/DET-122 **MD 328**

Cooling Processes

The Prediction of Three-Dimensional Discrete-Hole Cooling Processes—Part 2: Turbulent Flow **HT 141**

Cooling Research

Temperature and Pressure Measurement Techniques for an Advanced Turbine Test Facility **P 468**

Cooling Systems

Analysis and Design of Hybrid Double-Absorption Cooling Systems for Low Grade Thermal Energy Applications (80-WA/HT-44) **SE 331**

Cooper, R. K. The Effect of Cross-Winds on Trains **F 170**

Coordinate Systems

Basic Transport Equations in Ascending Equiangular Spiral Polar Coordinates (BN) **AM 190**

Condensation

Effect of Knudsen Number on Dropwise Condensation (TN) **HT 606**

Contact

The Contact Problem for a Rigid Inclusion Pressed Between Two Dissimilar Elastic Half Planes **AM 104**

Friction—The Present State of Our Understanding **L 159**

Unsteady Heat Flow between Solids with Partially Contacting Interface **HT 32**

Contact Analysis

Simplified Fatigue Life Analysis for Traction Drive Contacts (80-C2/DET-40) **MD 430**; (D) **MD 438**; (AC) **MD 439**

Contact Bearings

Minimum Load Requirements for the Prevention of Skidding in High Speed Thrust Loaded Ball Bearings (80-C2/Lub-3) **L 35**

Contact Load

Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) **MD 410**; (D) **MD 417**; (AC) **MD 420**

Contact Pressure

Rotating Elasto-plastic Interference Fits (80-C2/DET-11) **MD 61**

Contact Ratio Gearing

An Extended Model for Determining Dynamic Loads in Spur Gearing (80-C2/DET-90) **MD 398**

Contact Ratios

Calculation of Contact Ratios for Plastic/Plastic or Plastic/Steel Spur Gear Pairs (80-C2/DET-105) **MD 528**

Contact Stress

Contact Stress Between Rollers With Surface Irregularity (80-C2/DET-10) **MD 492**

Contact Stresses Between Elastic Cylinders: A Comprehensive Theoretical and Experimental Approach (80-C2/Lub-29) **L 40**

Vibration of an Elastic Circular Plate on an Elastic Half Space—A Direct Approach **AM 161**

Contact Temperature

Contact Temperature in Dry Bearings. Three Dimensional Theory and Verification (80-C2/Lub-40) **L 243**; (D) (AC) **L 252**

An Experimental Investigation of the Effect of Lubricant Properties on Temperature and Wear in Sliding Concentrated Contacts (80-C2/Lub-1) **L 261**

Contacting Bodies

Contact Stress Between Rollers With Surface Irregularity (80-C2/DET-10) **MD 492**

Surface Temperatures in Sliding Systems—A Finite Element Analysis (80-C2/Lub-28) **L 90**

Control

Advances in Transportation Technology: 1981 (F) **DS 170**

First Announcement—American Control Conference, review **DS 38**

Model Following Control of Gas Turbine Engines **DS 285**

A Note on Avoidance Control **DS 69**

Control Strategies

Experimental Comparison of Control Strategies for Solar Energy Systems Incorporating Dual Storage Tanks **SE 47**

Control Systems

Control Systems for Automotive Vehicle Fuel Economy: A Literature Review **DS 173**

A First Principles Model for Steam Turbine Control Analysis **DS 61**

Ten Years of Digital Computer Control of Combustion Turbines (80-GT-78) **P 54**

Controlled Microstructure

Abrasive Wear in Machining: Experiments With Materials of Controlled Microstructure **MT 151**

Controlling Noise

Proceedings of Noise-CON 79, Machinery Control Noise (BR) **MD 261**

Convective Cooling

Steady-State Temperature Distribution in a Rotating Roll Subject to Surface Heat Fluxes and Convective Cooling **HT 36**

Convective Transport

On the Transient Convective Transport from a Body of Arbitrary Shape **HT 92**

Conversion Systems

The Nuclear Closed-Cycle Gas Turbine (HTGR-GT)—Dry Cooled Commercial Power Plant Studies (80-GT-82) **P 89**

Turbomachinery Design Considerations for the Nuclear HTGR-GT Power Plant (80-GT-80) **P 65**

Convertors

Minimum Energy-Loss Control of Electro- and Hydro-Mechanical Modulated Convertor Drives (80-C2/DET-42) **MD 48**

Cook, R. D. *(reviewer)* B. M. Fraeijs de Veubeke Memorial Volume of Selected Papers (BR) **AM 884**

Cookson, R. A. The Vibration Isolating Properties of Uncentralized Squeeze-Film Damper Bearings Supporting a Flexible Rotor **P 781**

Cooled Porous Region

Heat Transfer in Cooled Porous Region with Curved Boundary **HT 765**

Cooperrider, N. K. Experimental Investigation of Freight Car Lateral Dynamics **DS 201**; Guideway-Suspension Tradeoffs in Rail Vehicle Systems **DS 237**

Co-Planar Linkage Systems

The Application of Finite Element Methods to the Dynamic Analysis of Flexible Spatial and Co-Planar Linkage Systems (80-DET-87) **MD 643**

Copper

Flow Stresses of Prestrained Annealed OFHC Copper and SAE 1018 Steel **MT 188**

Cordaro, J. V. The Effect of Crossflow at the Entrance on Heat Transfer Enhancement in Tubes (TN) **HT 178**

Core Components

Trial Application of the Draft Structural Design Criteria for Breeder Reactor Core Components to a Typical Blanket Assembly Duct **PVT 380**

Cores

Structural Confinement and Safety Design of a Fast Reactor Core (80-C2/DET-112) **MD 289**

Cornell, R. W. Compliance and Stress Sensitivity of Spur Gear Teeth (80-C2/DET-24) **MD 447**

Corner Cracks

Stress Intensity Factors for Corner Cracked Holes Under General Loading Conditions **MT 171**

Cornhill, J. F. Vascular Endothelial Morphology as an Indicator of the Pattern of Blood Flow **BE 172**

Corotating Fluid

Heat Transfer from a Cone Spinning in a Corotating Fluid (TN) **HT 815**

Correspondent Report

Complex Turbulent Flows: Comparison of Computation and Experiment **F 184**

Corrosion

Corrosion Fatigue Crack Growth Behavior of HY-130 Steel and Weldments **PVT 314**

Effect of Sodium, Potassium, Magnesium, Calcium, and Chlorine on the High Temperature Corrosion of In-100, U-700, IN-792, and MAR M-509 (80-GT-150) **P 294**

A New Parameter for Characterizing Corrosion Fatigue Crack Growth **MT 298**

Corrugated Covers

Effect of Corrugated Cover Directional Transmittance on the Thermal Performance of a Solar Collector **SE 144**

Corrugated Pipes

On the Stokes Flow of Viscous Fluids Through Corrugated Pipes (Er) **AM 454**

Cosgrove, M. C. Writing for "The Audience" (80-C2/DET-125) **MD 342**

Couette Flow

Microconvective Thermal Conductivity in Disperse Two-Phase Mixtures as Observed in a Low Velocity Couette Flow Experiment **HT 47**

Coulomb Friction

A New Solution to Coulomb Friction in Mechanism Bearings: Theory and Application (80-DET-52) **MD 764**

Counter-Current Flow

Tilting, Stretching, Pairing and Collapse of Vortex Structures in Confined Counter-Current Flow (80-WA/FE-11) **F 468**

Couple Stress

Transient Study of Couple Stress Effects in Compact Bone: Torsion **BE 275**

Coupler-Drive Mechanism

Closure Equations for a Six-Link Coupler-Drive Mechanism **MD 236**

Couplers

A Classification of Coupler-Line Envelopes from Hinged Four-Bar Linkages (80-DET-42) **MD 750**

Equations for Four-Bar Line-Envelopes (80-DET-40) **MD 743**; (D) (AC) **MD 749**

Coupling

Friction Between High Speed Gear Coupling Teeth (80-C2/DET-5) **MD 54**

Transient Cavitation in Fluid-Structure Interactions (80-C2/PVP-23) **PVT 345**

Covering Plates

Performance of Storage Walls with Highly Conductive Covering Plates and Connecting Fins **SE 201**

Cowgill, M. G. The Creep Rupture Properties of ASME SA 516 (Grade 55) Steel in the Range 426°C to 872°C **MT 253**

Cowin, S. C. An Analytical Model of Pauwels' Functional Adaptation Mechanism in Bone **BE 246**; Ultrasonic Measurement of Orthotropic Elastic Constants of Bovine Femoral Bone **BE 67**

Cox, G. B., Jr. Pattern Factor Improvement in the F-100 Primary Conbustion System (81-GT-25) **P 739**

Coy, J. J. Constrained Fatigue Life Optimization of a Nasvytis Multiroller Traction Drive (80-C2/DET-78) **MD 423**; (D) **MD 426**; (AC) **MD 429**; Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) **MD 127**; Simplified Fatigue Life Analysis for Traction Drive Contacts (80-C2/DET-40) **MD 430**; (D) **MD 438**; (AC) **MD 439**; Some Limitations in Applying Classical EHD Film Thickness Formulas to a High-Speed Bearing (80-C2/Lub-13) **L 295**; (D) **L 301**; (AC) **L 303**

Crabb, D. A Round Jet Normal to a Crossflow (80-WA/FE-18) **F 142**

Crack Arrest

Crack Arrest Modes of a Transverse Crack Going Through a Longitudinal Crack or a Hole **MT 177**

Crack Growth

Application of the Tearing-Mode Crack-Growth Instability Theory to a Cracked Pressure Vessel Nozzle **PVT 59**

A Critical Analysis of Crack Growth in Creep (D) (AC) **MT 264, 265**

The Effect of Product Form Upon Fatigue-Crack Growth Behavior in Alloy 718 (81-Mat-1) **MT 234**

The Equivalence of the Final Stretch and Crack Tip Opening Angle Criteria for Plain Strain Crack Growth **MT 148**

Fatigue Life Predictions of Smooth and Notched Specimens Based on Fracture Mechanics **MT 91**

Fracture Mechanics (BR) **MT 77**

The Inelastic Line-Spring: Estimates of Elastic-Plastic Fracture Mechanics Parameters for Surface-Cracked Plates and Shells (80-C2/PVP-109) **PVT 246**

A New Parameter for Characterizing Corrosion Fatigue Crack Growth **MT 298**

A Statistical Investigation of Microstructure and Crack Growth in Titanium Alloys (80-GT-125) **P 180**

Threshold and Low-Rate Fatigue Crack Growth of a NiMoV Rotor Steel **MT 104**

Crack Initiation

A Dislocation Model for Fatigue Crack Initiation (81-APM-3) **AM 97**

Crack Instability

Ductile Tearing Instability of a Center-Cracked Panel of an Elastic-Plastic Strain Hardening

Material **MT 46**

Crack Propagation

Dynamic Crack Propagation in Precracked Cylindrical Vessels Subjected to Shock Loading **PVT 155**

Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (TB) **PVT 200**

A Sensitivity Study on Numerical Analysis of Dynamic Girth Crack Propagation (80-C2/PVP-107) **PVT 169**

Crack Tip Opening

The Equivalence of the Final Stretch and Crack Tip Opening Angle Criteria for Plane Strain Crack Growth **MT 148**

Crack-Tip Plasticity

The Effect of Crack-Tip Plasticity on the Determination of Dynamic Stress-Intensity Factors by the Optical Method of Caustics **AM 302**

Cracked Pipes

A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part I: J-Integral Analysis (80-WA/PVP-3) **PVT 352**; Part II: Experimental Verification on a Type 304 Stainless Steel Pipe (80-WA/PVP-4) **PVT 359**

Cracks

Approximate Description of Crack Kinking and Curving (81-APM-22) **AM 515**

Crack Path Prediction for a Kinked Crack in the Neighborhood of a Circular Inclusion in an Infinite Medium (81-APM-31) **AM 313**

Diffraction of Elastic Waves by a Surface Crack on a Plate **AM 570**

Elastodynamic Stress-Intensity Factors for a Crack Near a Free Surface **AM 539**

An Embedded Elliptical Crack, in an Infinite Solid, Subject to Arbitrary Crack-Face Tractions **AM 88**

Energy-Release Rate and Crack Kinking Under Combined Loading **AM 520**

Fatigue Crack Growth Behavior of Explosively-Bonded Clad Steel Plates **MT 36**

Multispecimen Fatigue Crack Propagation Testing **MT 240**

Note on the Energy-Release Rate for a Crack Starting From the Apex of a Wedge (BN) **AM 194**

On the Physical Basis of Auerbach's Law (TB) **MT 183**

A Plastic Fracture Instability Analysis of Wall Breakthrough in a Circumferentially Cracked Pipe Subjected to Bending Loads **MT 194**

Residual Stress Redistribution Caused by Notches and Cracks in a Partially Autofrettaged Tube (81-PVP-6) **PVT 302**

Small Crack Behavior and the Prediction of Fatigue Life **MT 26**

Stable Phase of Ductile Fracture in Two and Three Dimensions, Final Stretch Model (81-WA/APM-5) **AM 500**

Stress-Intensity Factor for a Three-Dimensional Rectangular Crack **AM 309**

Thickness Effects Are Minor in the Energy-Release Rate Integral for Bent Plates Containing Elliptic Holes or Cracks **AM 320**

Three-Dimensional Finite Element Analysis of Elastic-Plastic Crack Problems (80-C2/PVP-36) **PVT 214**

The Use of the Split Ring in Modeling Ductile Axial Crack Extension in Pipes **PVT 151**

Craig, J. J. Hybrid Position/Force Control of Manipulators **DS 126**

Crandall, S. H. Resonant Whirling of Aircraft Propeller-Engine Systems **AM 929**; *(reviewer)* The Symmetric Eigenvalue Problem (BR) **AM 988**

Crecelius, W. J. Calculated and Experimental Data for a 118-mm Bore Roller Bearing to 3 Million DN (80-C2/Lub-14) **L 274**; (D) **L 282**; (AC) **L 283**; Rolling Bearing Life Modifying Factors for Film Thickness, Surface Roughness, and Friction (80-C2/Lub-16) **L 509**; (D) **L 516-518**; (AC) **L 519**

Creep

Creep Analysis (BR) **AM 451**

Creep and Creep Recovery of 304 Stainless Steel at Low Stresses With Effects of Aging on Creep and Plastic Strains (81-WA/APM-17) **AM 785**

Creep Relaxation of Fuel Pin Bending and Ovalling Stresses (80-C2/NE-24) **P 621**

A Critical Analysis of Crack Growth in Creep (D) (AC) **MT 284, 285**

Creep Curves

Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) **MD 410**; (D) **MD 417**; (AC) **MD 420**

Creep Deformation

Effect of the External Load on the Thermoelastoplastic Creep Deformation (BN) **AM 429**

Creep Rupture

Creep Rupture Behavior of Selected Turbine Materials in Air, Ultra-High Purity Helium, and Simulated Closed Cycle Brayton Helium Working Fluids (80-GT-173) **P 331**

Creep Rupture Bending Test of 20 Percent Cold-Prestrained Ni-Fe-Cr Alloy Straight Tubes at 1100 F (593C) (80-C2/PVP-18) **PVT 337**

The Creep Rupture Properties of ASME SA 516 (Grade 55) Steel in the Range 426°C to 872°C **MT 253**

Creep Velocity

Influence of Wheel/Rail Contact Geometry on Large Amplitude Wheelset Equations of Motion **DS 211**

Creeping Flows

Droplet Dynamics in Creeping Flows (81-APM-29) **AM 224**

Creeping Viscous Flow

Creeping Viscous Flow Around a Heat-Generating Solid Sphere **AM 239**

Cremers, C. J. Prediction of Growth Parameters of Frost Deposits in Forced Convection **HT 3**

Critical Heat Flux

Critical Heat Flux Experiments and Correlation in a Long, Sodium-Heated Tube **HT 74**

Critical Heat Flux in Helically Coiled Tubes **HT 660**

Critical Speed

Influence of Acceleration on the Critical Speed of a Jeffcott Rotor (80-GT-88) **P 108**

Crocker, M. J. *(editor)* Proceedings of Noise-CON 79, Machinery Control Noise (BR) **MD 261**

Cronin, D. L. Resonances and Instabilities in Dynamic Systems Incorporating a Cam **MD 914**

Crosbie, A. L. Anisotropic Two-Dimensional Scattering: Comparison of Experiment with Theory **HT 127**

Crossflow

The Effect of Crossflow at the Entrance on Heat Transfer Enhancement in Tubes (TN) **HT 178**

An Experimental Investigation of Ice Formation around an Isothermally Cooled Cylinder in Crossflow **HT 733**

Measured Heat Transfer Coefficients at and Adjacent to the Tip of a Wall-Attached Cylinder in Crossflow—Application to Fins **HT 778**

Mixed Convection Heat Transfer from Horizontal Cylinders in the Crossflow of a Finite Water Layer **HT 540**

A Round Jet Normal to a Crossflow (80-WA/FE-18) **F 142**

Crossland, B. Thoughts on a Code of Practice for Forged High-Pressure Vessels of Monobloc Design **PVT 2**

Crosswind Gusts

Modeling and Dynamic Response of Maglev Vehicles Subjected to Crosswind Gusts (80-WA/DSC-8) **DS 251**

Cross-Winds

The Effect of Cross-Winds on Trains **F 170**

Crowe, C. T. *(reviewer)* Fundamentals of Gas-Particle Flow (BR) **F 644**

Crown Gear

Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) **MD 127**; (D) **MD 133**; (AC) **MD 133**

Crowning

Endurance and Failure Characteristics of Modified Vasco X-2, CBS 600 and AISI 9310 Spur Gears (80-C2/DET-58) **MD 506**; (D) **MD 514**; (AC) **MD 514, 515**

Crupper, G., Jr. Natural Convection Heat Transfer Between Cylindrical Tube Bundles and a Cubical Enclosure **HT 103**

Crystal

Residual Stresses of Czochralski-Grown Crystal **AM 866**

Cubical Enclosures

Natural Convection Heat Transfer Between Cylindrical Tube Bundles and a Cubical Enclosure **HT 103**

Cumulative Damage

A Statistical Simulation Model of Miner's Rule **MT 112**

Cunningham, R. G. Cavitation Inception in Spool Valves **F 564**; (D) **F 575**; (AC) **F 576**

Current

Dynamic Response of a Double Articulated Offshore Loading Structure to Noncollinear Waves and Current (80-Pet-56) **ERT 41**

Current Trends

Current Trends in the Design of Mechanisms **MD 549**

Curtis, D. M. Solution of Navier's Equation in Rotational Curvilinear Coordinates (BN) **AM 659**

Curtiss, H. C., Jr. *(author)* A Modern Course in Aeroelasticity (BR) **MD 261**

Curvature

Effects of Case Depth and Relative Radius of Curvature on Surface Durability of Case-Hardened Chromium Molybdenum Steel Roller (80-C2/DET-37) **MD 474**

Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) **MD 127**; (D) **MD 133**; (AC) **MD 133**

A Method of Local Synthesis of Gears Grounded on the Connections Between the Principal and Geodetic Curvatures of Surfaces (80-C2/DET-30) **MD 114**

Curvature Theory

The Curvature Theory of Line Trajectories in Spatial Kinematics (80-DET-18) **MD 718**

Curved Boundary

Heat Transfer in Cooled Porous Region with Curved Boundary **HT 765**

Curved Channels

The Effect of Gravity on Certain Curved Channel Potential Flows (81-FE-19) **F 639**

Curves

Kinematic Mappings. Part I: Classification of Algebraic Motions in the Plane (80-DET-16) **MD 585**

Lateral Dynamics of a Rail Transit Vehicle: A Comparison of Experimental and Theoretical Results **DS 39**

Curving

Approximate Description of Crack Kinking and Curving (81-APM-22) **AM 515**

Curving Mechanics

Stability and Curving Mechanics of Rail Vehicles (80-WA/DSC-15) **DS 181**

Curving Performance

A Comparison of the Stability and Curving Performance of Radial and Conventional Rail Vehicle Trucks **DS 191**

Cushioning

Analysis of a Pneumatically Coupled Cam-Actuated Mechanism **DS 290**

Cutting Conditions

Optimum Process Design for a Single-Stage Multifunctional Production System (80-WA/Prod-19) **I 218**

Cutting Force

Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part I: Plain Milling With a Single-Toothed Helical Cutter (80-WA/Prod-4) **I 165**; Part II: Plain Milling With a Multi-Toothed Helical Cutter (80-WA/Prod-5) **I 174**

Cutting Machines

A Method of Local Synthesis of Gears Grounded on the Connections Between the Principle and Geodetic Curvatures of Surfaces (80-C2/DET-30) **MD 114**; (D) **MD 124**

Cutting Speeds

Behavior of Self-Excited Chatter Due to Multiple Regenerative Effect **I 324**

Cuypers, M. Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) **MD 410**; (D) **MD 417**; (AC) **MD 420**

Cycle Dependent Behavior

A Design Approach for Correlating High Temperature Fatigue Crack Growth Over a Wide Range of Parameters **MT 248**

Cycles

A Single-Stage Ammonia/Water Absorption Cycle With Integrated Heat Exchange Components **SE 42**

Cyclic Hardening
Endochronic Description of Cyclic Hardening Behavior for Metallic Materials **MT 212**
Cyclic Loading
Methods of Predicting Material Life in Fatigue (Ed) **MT 81**
The Rate (Time)-Dependent Behavior of Ti-7Al-2Cb-1Ta Titanium Alloy at Room Temperature Under Quasi-Static Monotonic and Cyclic Loading (81-APM-7) **AM 55**
On Stress-Strain Relations Suitable for Cyclic and other Loading (81-WA/APM-6) **AM 479**
Cyclic Stress
Fatigue Failure Criteria for Unidirectional Fiber Composites **AM 846**
Cyclic Stress Effects
A Statistically Based Investigation of the Environmental and Cyclic Stress Effects on Fretting Fatigue **MT 218**
Cyclone Separators
Separation Efficiency of a Cyclone Separator with a Turbulence-Suppressing Rotating-Insert (80-IPC-Pwr-11) **P 566**
Cylinders
An Analytical Solution for the Normal Load Carrying Capacity of Lightly Loaded Cylinders in Combined Rolling, Sliding and Normal Motion (TB) **L 467**
Bending and Twisting of Internally Pressurized Thin-Walled Cylinder With Creep (BN) **AM 439**
Boiling Burnout During Crossflow over Cylinders, Beyond the Influence of Gravity **HT 478**
Computation of the Turbulent Flow in an Internal Combustion Engine During Compression **F 75**
Developing Laminar Free Convection in an Open Ended Vertical Annulus with a Rotating Inner Cylinder **HT 552**
A Diagonally Dominant Solution for the Cylinder End Problem (81-WA/APM-12) **AM 876**
An Experimental Investigation of Ice Formation around an Isothermally Cooled Cylinder in Crossflow **HT 733**
Failure of Thin Film Lubrication—The Effect of Running-In on the Load Carrying Capacity of Thin-Film Lubricated Concentrated Contacts (80-C2/Lub-42) **L 203**; (D) (AC) **L 209**
A Horizontal Flow Past a Partially Heated, Infinite Vertical Cylinder **HT 546**
The Influence of Swirl on the Flow Characteristics of a Reciprocating Piston-Cylinder Assembly (D) (AC) **F 180, 181**
Line Contact Deformation: A Cylinder Between Two Flat Plates (80-C2/Lub-50) **L 21**
Measured Heat Transfer Coefficients at and Adjacent to the Tip of a Wall-Attached Cylinder in Crossflow—Application to Fins **HT 778**
Mixed Convection Heat Transfer from Horizontal Cylinders in the Crossflow of a Finite Water Layer **HT 540**
Natural Convection Heat Transfer Between Cylindrical Tube Bundles and a Cubical Enclosure **HT 103**
Natural Convection from a Horizontal Cylinder—Laminar Regime **HT 522**
Phase Change Around a Circular Cylinder (TN) **HT 596**
Pressure and Vortex Shedding Patterns Around a Low Aspect Ratio Cylinder in a Sheared Flow at Transcritical Reynolds Numbers (D) **F 373**; (AC) **F 374**
The Rolling Contact of Two Elastic-Layer-Covered Cylinders Driving a Loaded Sheet in the Nip **AM 889**
Stress Analysis of O.D. Notched Thick-Walled Cylinders Subjected to Internal Pressure or Thermal Loads **PVT 76**
Structural Confinement and Safety Design of a Fast Reactor Core (80-C2/DET-112) **MD 289**
Cylindrical Bearings
Some Experiments on the Steady State Characteristics of a Cylindrical Fluid-Film Bearing Considering Thermal Effects (80-C2/Lub-34) **L 107**
Cylindrical Billets
A Semi-Empirical Solution to Upset Forging **I 478**
Cylindrical Containers
Ductile Fracture of Pipes and Cylindrical Containers With a Circumferential Flaw **PVT 160**
Cylindrical Hob
Table Sliding Taper Hobbing of Conical Gear Using Cylindrical Hob. Part 1: Theoretical Analysis of Table Sliding Taper Hobbing **1446**; Part 2: Hobbing of Conical Involute Gear **I 452**
Cylindrical Inclusion
Stress Field Due to a Cylindrical Inclusion With Constant Axial Eigenstrain in an Infinite Elastic Body **AM 853**
Cylindrical Medium
Nongray Particulate Radiation in an Isothermal Cylindrical Medium **HT 121**
Cylindrical Pin Fins
Optimum Cylindrical Pin Fin (TN) **HT 814**
Cylindrical Pipe Wall
Sound Transmission Through a Cylindrical Pipe Wall (80-WA/NC-3) **I 355**
Cylindrical Prechambers
A Correlation for Air Velocities in Cylindrical Prechambers of Diesel Engines **P 499**
Cylindrical Shells
Approximate Elastic-Plastic Analysis of Intersecting Equal Diameter Cylindrical Shells (TB) **PVT 111**
Equilibrium of Heavy Elastic Cylindrical Shells **AM 582**
Mode Interaction of Axially Stiffened Cylindrical Shells: Effects of Stringer Axial Stiffness, Torsional Rigidity, and Eccentricity (81-WA/APM-28) **AM 915**
Nonlinear Response of an Elastic Cylindrical Shell to a Transient Acoustic Wave (81-APM-10) **AM 15**
Point Admittance of Cylindrical Shells With and Without Ring-Stiffening (80-WA/NC-5) **I 293**
Cylindrical Surfaces
A Deep Drawing Test for Determining the Punch Coefficient of Friction (80-WA/Prod-10) **I 197**
Cylindrical Tanks
Three-Directional Fluid Pool Seismic Sloshing Analysis (80-C2/PVP-49) **PVT 10**
Cylindrical Tubes
Piercing of Cylindrical Tubes (80-C2/PVP-150) **PVT 255**
Cylindrical Vessels
Dynamic Crack Propagation in Precracked Cylindrical Vessels Subjected to Shock Loading **PVT 155**
A Finite Element Formulation for Fluid-Structure Interaction in Three-Dimensional Space **PVT 183**
Czichos, H. Failure of Thin Film Lubrication—An Expedient for the Characterization of Lubricants (80-C2/Lub-43) **L 497**; (D) **L 501**; (AC) **L 502**
Czyryca, E. J. Corrosion Fatigue Crack-Growth Behavior of HY-130 Steel and Weldments **PVT 314**

D

Dadras, P. Upper Bound Analysis of Axisymmetric, Closed-Die Forgings (80-WA/PROD-1) **I 109**; A Semi-Empirical Solution to Upset Forging **I 478**
Dafalias, Y. F. Constitutive Equations of Elastoplastic Materials With Elastic-Plastic Transition (D) **AM 211**
Dalmaz, G. An Experimental Evaluation of the Hamrock and Dowson Minimum Film Thickness Equation for Fully Flooded EHD Point Contacts (80-C2/Lub-38) **L 284**; (D) **L 294**
Damage Accumulation
A Damage Accumulation Model for Fatigue Crack Propagation **MT 293**
Damage Theory
The Continuous Damage Theory of Brittle Materials. Part 1: General Theory **AM 809**; Part 2: Uniaxial and Plane Response Modes **AM 816**
Damping
Experiments on the Vibration Characteristics of a Rotor With Flexible, Damped Support (80-GT-124) **P 174**
Flow Velocity Dependence of Damping in Tube Arrays Subjected to Liquid Cross-Flow **PVT 130**
Optimal Isolation of a Single-Degree-of-Freedom System With Quadratic-Velocity Damping (BN) **AM 678**
Damping Layers
Free Vibration of Thin-Walled Open Section Beams With Unconstrained Damping Treatment **AM 169**
Dan, Y. An Analysis of Mechanical Face Seal Vibrations (80-C2/Lub-8) **L 428**; (D) (AC) **L 434**
Daniels, B. K. Constrained Fatigue Life Optimization of a Nasvytis Multiroller Traction Drive (80-C2/DET-78) **MD 423**; (D) **MD 428**; (AC) **MD 429**; Simplified Fatigue Life Analysis For Traction Drive Contacts (80-C2/DET-40) **MD 430**; (D) **MD 438**; (AC) **MD 439**
Darkazalli, G. Conduction of Heat Across Rectangular Cellular Enclosures **HT 591**
Darlow, M. S. Demonstration of a Unified Approach to the Balancing of Flexible Rotors (80-GT-87) **P 101**
Darrieus Rotors
Rotational Interference for Darrieus Rotors (TB) **SE 173**
Dasgupta, G. Viscoelastic Responses of Finite Bodies by Quadrature Form of Correspondence Principle (BN) **AM 206**
Daugherty, T. S. *(author)* Materials in World Perspective (BR) **MT 78**
Davies, D. N. C. Roller Chain as a Transfer Drive for the Automobile **MD 19**
Davies, G. E. Fluidics in Aircraft Engine Controls **DS 324**
Davies, P. F. The Dynamic Response of Vascular Endothelial Cells to Fluid Shear Stress **BE 177**
Davis, D. A. Corrosion Fatigue Crack-Growth Behavior of HY-130 Steel and Weldments **PVT 314**
Davis, R. Design of Aluminum Bicycle Frames **MD 901**
Deadmore, D. L. Effect of Sodium, Potassium, Magnesium, Calcium, and Chlorine on the High Temperature Corrosion of In-100, U-700, IN-792, and MAR M-509 (80-GT-150) **P 294**
De Boer, E. A Method for the Calculation of 3D Boundary Layers on Practical Wing Configurations **F 104**
De Choudhury, P. A Comparison of Film Temperatures and Oil Discharge Temperature for a Tilting-Pad Journal Bearing (80-C2/Lub-37) **L 115**
Decompression
Bubble Growth During Decompression of a Liquid (79-HT-73) **HT 56**
Deconinck, H. Finite Element Methods for Transonic Blade-to-Blade Calculation in Turbomachines (81-GT-5) **P 665**
De Corso, S. M. Preliminary Design Analysis of a Catalytic Ceramic Structure in a Turbine Combustor (78-WA/GT-10 **P 338**
Decoupling
Long Arc Shrouding—A Reliability Improvement for Untuned Steam Turbine Blading (78-JPGC-Pwr-12) **P 522**; (D) **P 527, 528, 530**; (AC) **P 528, 529, 530**
Deep Cracks
Application of the Tearing-Mode Crack-Growth Instability Theory to a Cracked Pressure Vessel Nozzle **PVT 59**
Deep-Drawing Problem
Complete Numerical Solution of the Axisymmetricel Deep-Drawing Problem (81-WA/Mat-1) **MT 326**
Deep Drawing Test
A Deep Drawing Test for Determining the Punch Coefficient of Friction (80-WA/Prod-10) **I 197**
Deep Ocean Pipes
Nonlinear Static Analysis of Deep Ocean Mining Pipe—Part I: Modeling and Formulation (80-Pet-48) **ERT 11**; Part II: Numerical Studies (80-Pet-49) **ERT 16**
Nonlinear Transient Motion of Deep Ocean Mining Pipe **ERT 2**
Deep Water Risers
Analysis of the Horizontal to Vertical Orientation of Deep Water Risers (80-Pet-67) (TB) **ERT 106**
Deflections
Finite Element Analysis of Hydraulic Cylinders (80-DE-3) **MD 239**
Deformable Porous Media
Fluid Flow Through a Class of Highly-Deformable Porous Media Part I: Experiments With Air **F 432**; (D) **F 438**; (AC) **F 439**; Part II: Experiments With Water **F 440**
Deformable Tanks
Earthquake Response of Deformable Liquid Storage Tanks (80-C2/PVP-70) **AM 411**

Deformation
A Correct Definition of Elastic and Plastic Deformation and Its Computational Significance **AM 35**
The Deformation of a Thin, Incomplete, Elastic Ring in a Frictional Channel (81-WA/APM-22) **AM 895**
Large Plane-to-Surface Deformations of Membranes With Inclusion **AM 357**
de Gee, A. W. J. Failure of Thin Film Lubrication—The Effect of Running-In on the Load Carrying Capacity of Thin-Film Lubricated Concentrated Contacts (80-C2/Lub-42) **L 203**; (D) (AC) **L 209**
Delale, F. Ductile Fracture of Pipes and Cylindrical Containers With a Circumferential Flaw **PVT 160**; Viscoelastic Analysis of Adhesively Bonded Joints **AM 331**
Demiray, H. Large Deformation Analysis of Some Soft Biological Tissues **BE 73**
Density
Transient Natural Convection Heat Transfer of Water with Maximum Density Effect and Supercooling (80-HT-74) **HT 528**
Dent, J. C. A Correlation for Air Velocities in Cylindrical Prechambers of Diesel Engines **P 499**
Deposition
An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) **P 552**; (D) **P 558, 559**; (AC) **P 560**
Depressions
The Flow of a Non-Newtonian Fluid Past Projections and Depressions (D) **AM 448**
Depressurization
Correlation of Pressure Undershoot During Hot-Water Depressurization **HT 52**
Pneumatic Rupture of a Brittle Pipe: The Depressurization Transient Adjacent to the Ruptured Zone **PVT 287**
Derailment
Evaluation of Time-Duration Dependent Wheel Load Criteria for Wheelclimb Derailment (80-WA/DSC-21) **DS 219**
De Ruyck, J. Investigations of an Axial Compressor End-Wall Boundary Layer Prediction Method (80-GT-53) **P 20**
De Sa, S. Kinematic Mappings. Part 1: Classification of Algebraic Motions in the Plane (80-DET-16) **MD 585**; Part 2: Rational Algebraic Motions in the Plane (80-DET-17) **MD 712**
Desai, C. S. *(author)* Elementary Finite Element Method (BR) **MD 685**
Desai, P. V. On the Rowe-Spick Shear Angle Relations for Orthogonal Machining **I 79**
de Saint Victor, X. Numerical and Experimental Simulations of Pseudoplastic Transient Pipe Flows **AM 1**
De Santo, D. F. Added Mass and Hydrodynamic Damping of Perforated Plates Vibrating in Water **PVT 175**
Deshpande, R. B. Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (D) **P 603**; (AC) **P 603, 604**; Computation of Supercritical Compressor and Turbine Cascades with a Design Method for Transonic Flows (D) (AC) **P 604**
Desiccant Beds
Design and Testing of Thin Adiabatic Desiccant Beds for Solar Air Conditioning Applications **SE 89**
Desiccant Dehumidification
Analysis and Design of Efficient Absorbers for Low-Temperature Desiccant Air Conditioners **SE 67**
Design
Torque and Stress Balanced Design of Helically Armored Cables (80-WA/OCE-1) **I 61**
Design Conditions
Mathematical Model for Design Conditions for Cooling Load Calculations (80-C2/DET-122) **MD 328**
Design Education
Engineering Design Education: U.S.—Retrospective and Contemporary **MD 696**
Design Nomographs
Design Nomographs of Compression Helical Springs for Predetermined Reliability Levels (80-C2/DET-85) **MD 268**
Design Philosophies
Recent Advances in the ASME Section VIII Division 1 and 2 Pressure Vessel Codes **PVT 119**
Design Sensitivity Analysis
Design Sensitivity Analysis of Planar Mechanism and Machine Dynamics (80-DET-6) **MD 560**
Design Technology
Design Technology Committee Overview (Ed) **MD 257**
Design Technology Transfer Conference, review (CR) **MD 259**
Design Technology Transfer
Writing for "The Audience" (80-C2/DET-125) **MD 342**
Design Variables
The Optimization Problem With Optimal Tolerance Assignment and Fuel Acceptance (80-DET-47) **MD 842**
Designers
Results of an Industry/University Survey of Machine Systems Design Education **MD 687**
Desinent Cavitation
A Note on the Effect of Short and Long Laminar Separation Bubbles on Desinent Cavitation **F 28**
Desmond, T. P. Theoretical and Experimental Investigation of Stress Waves at a Junction of Three Bars (81-APM-16) **AM 148**
Destabilization
Destabilization of Film Boiling Due to Arrival of a Pressure Shock: Part I Experimental **HT 459**; Part II: Analytical **HT 465**
Deters, O. J. Correlation of Human Arterial Morphology With Hemodynamic Measurements in Arterial Casts **BE 204**
Developing Countries
International Technology Transfer—Who Should Learn the Second Language? (80-C2/DET-83) **MD 335**
Developing Flow
Stability of Developing Flow in a Pipe—Nonparallel Effects (81-APM-13) **AM 243**
Devonian Gas Shales
Modeling Capabilities for the Devonian Gas Shales **ERT 270**
Dewey, C. F., Jr. The Dynamic Response of Vascular Endothelial Cells to Fluid Shear Stress **BE 177**
Dhir, S. K. Optimization in a Class of Hole Shapes in Plate Structures **AM 905**
Diamond Cutting Tools
Fracture and Wear of Diamond Cutting Tools (81-WA/Mat-3) **MT 341**
Diaz, L. A. Temperature Variation in the Absorber Plate of an Air Heating Flat Plate Solar Collector (80-WA/Sol-2) **SE 153**
Diaz, L. F. Biogasification of Municipal Solid Wastes **ERT 180**
Diaz-Munio, R. F. A Finite-Element Singular-Perturbation Technique for Convection-Diffusion Problems—Part 1: The One-Dimensional Case **AM 265**; Part 2: Two-Dimensional Problems **AM 272**
Dickson, W. H. Preliminary Design Analysis of a Catalytic Ceramic Structure in a Turbine Combustor (78-WA/GT-10) **P 338**
Dielectrophoretic Forces
On a Bénard Convection in the Presence of Dielectrophoretic Forces (BN) **AM 980**
Diesel Engines
A Correlation for Air Velocities in Cylindrical Prechambers of Diesel Engines **P 499**
Differential Equations
Characteristic Forms of Differential Equations for Wave Propagation in Nonlinear Media (81-WA/APM-23) **AM 743**
Differential Games
Payoff Sensitivity of Linear Quadratic Differential Games to Parameter Change **DS 36**
Diffusers
Effects of Free-Stream Turbulence on Diffuser Performance (81-FE-4) **F 385**
Flow Field Analysis and Performance of Wind Turbines Employing Slotted Diffusers **SE 17**
The Hybrid Diffuser (80-GT-135) **P 229**
REVIEW: Effects of Inlet Conditions on Conical-Diffuser Performance **F 250**
A Study on Centrifugal Impeller and Diffuser Flow (81-GT-9) **P 688**
Diffusion
Diffusion of Macromolecules Across the Arterial Wall in the Presence of Multiple Endothelial Injuries **BE 197**
Dispersion in Laminar Flow Through Tubes by Simultaneous Diffusion and Convection **AM 217**
A Finite-Element Singular-Perturbation Technique for Convection-Diffusion Problems—Part 1: The One-Dimensional Case **AM 265**; Part 2: Two-Dimensional Problems **AM 272**
Digby, P. J. The Effective Elastic Moduli of Porous Granular Rocks **AM 803**
Digestion Biogasification of Municipal Solid Wastes **ERT 180**
Digital Computers
Ten Years of Digital Computer Control of Combustion Turbines (80-GT-78) **P 54**
Digital Simulation
Improved Statistical Linearization for Analysis and Control of Nonlinear Stochastic Systems—Part I: An Extended Statistical Linearization Technique **DS 14**; Part II: Application to Control System Design **DS 22**; Linear Prediction Theory for Digital Simulation of Sea Waves (81-Pet-7) **ERT 243**
Dilute Solutions
On the Equilibrium of Cavitation Nuclei in Liquid-Gas Solutions **F 425**; (D) (AC) **F 430**
DiMaggio, F. L. Uncoupling Approximations in Fluid-Structure Interaction Problems With Cavitation **AM 753**
Di Pippo, E. A. Compound Hybrid Geothermal-Fossil Power Plants: Thermodynamic Analyses and Site-Specific Applications **P 797**
Di Pippo, R. Compound Hybrid Geothermal-Fossil Power Plants: Thermodynamic Analyses and Site-Specific Applications **P 797**
Direct Contact Heat Exchangers
A Parametric Study of a Particulate Direct Contact Heat Exchanger (78-WA/HT-16) **HT 586**
Directional Control Valves
Cavitation Inception in Spool Valves **F 584**; (D) **F 575**; (AC) **F 576**
Directional Microphones
Analytical Modeling of Wave Interference Directional Microphones (80-WA/NC-6) **I 361**
Directional Transmittance
Effect of Corrugated Cover Directional Transmittance on the Thermal Performance of a Solar Collector **SE 144**
Discharge Coefficients
An Investigation Into the Performance of Two Inlet Nozzles for Flow Measurement **F 67**; (D) (AC) **F 73**
Discharge Oil Temperature
A Comparison of Film Temperatures and Oil Discharge Temperature for a Tilting-Pad Journal Bearing (80-C2/Lub-37) **L 115**
Discharge Piping
Design of Discharge Piping for Pressure Relief Systems (80-Pet-59) **ERT 190**
Disclinations
Dislocations in Solids: Other Effects of Dislocations: Disclinations (BR) **AM 452**
Discrete-Hole Cooling
The Prediction of Three-Dimensional Discrete-Hole Cooling Processes—Part 2: Turbulent Flow **HT 141**
Discrete-Time Filtering Problems
Discrete-Time Equivalent of Continuous-Time Filtering Process **DS 417**
Discrete-Time Model
A Discrete-Time Adaptive Filter for Stochastic Distributed Parameter Systems **DS 268**
Discretization Schemes
Calculation of Annular and Twin Parallel Jets Using Various Discretization Schemes and Turbulence-Model Variations **F 352**
Disk Machines
Simulation of Hertzian Contacts Found in Spur Gears with a High Performance Disk Machine **MD 204**
Disks
The Effect of Inertia on Flow Between Misaligned Rotating Disks (80-WA/FE-2) **F 82**
Fluid-Inertia Effects in Radial Flow Between Oscillating, Rotating Parallel Disks (80-C2/Lub-48) **L 144**
Gas Turbine Engine Disk Retirement-for-Cause: An Application of Fracture Mechanics and NDE (80-GT-127) **P 198**

Optimum Design of an Abrasive Disk MD 818
Rotating Compressible Flow Over the Edge of a Finite Disk (81-APM-19) AM 249
The Stress Distribution in Orthotropic Rotating Disks AM 559
Dislocations
A Damage Accumulation Model for Fatigue Crack Propagation MT 293
A Dislocation Model for Fatigue Crack Initiation (81-APM-3) AM 97
Dislocations in Solids: Dislocations in Metallurgy (BR) AM 451
Dislocations in Solids: Moving Dislocations (BR) AM 214
Dislocations in Solids: Other Effects of Dislocations: Disclinations (BR) AM 452
A Phenomenological Model for Transient Deformation Based on State Variables MT 314
Dispersion
Acoustoelastic Effect of Rayleigh Surface Wave in Isotropic Material AM 119
Dispersion in Laminar Flow Through Tubes by Simultaneous Diffusion and Convection AM 217
Displacement Coefficients
Measured Characteristics of a Journal Bearing Oil Film (80-C2/Lub-51) L 120
Disposal Facility
Duluth Co-Disposal Facility ERT 262
Dissimilar Metals
A Review of the Recent Literature on the Unlubricated Sliding Wear of Dissimilar Metals (81-WA/Mat-2) MT 333
Distributed Bilinear Systems
Volterra Series Expansion for Bilinear Systems in a Nonlinear Feedback Loop DS 84
Distributed Parameter Systems
Nonlinear State Estimation and Feedback Control of Nonlinear and Bilinear Distributed Parameter Systems DS 78
Optimum Pulse Control of Flexible Structures AM 619
A Procedure to Generate Liapunov Functional for Distributed Parameter Systems (BN) AM 188
Space Sampling Effects in Nonlinear Distributed System Stability DS 54
Distributed Systems
A Discrete-Time Adaptive Filter for Stochastic Distributed Parameter Systems DS 286
Dodd, A. B., Jr. Long Arc Shrouding—A Reliability Improvement for Untuned Steam Turbine Blading (78-JPGC/Pwr-12) P 522; (D) P 527, 528, 530; (AC) P 528, 529, 530
Dolan, R. B. Polycarbonate Plastic Inserts for Spherical Acrylic Plastic Shells Under Hydrostatic Loading I 90
Dolev, D. On the Physical Basis of Auerbach's Law (TB) MT 183
Domestic Heating
Solar-Assisted Heat Pump and Swimming Pool Synergy for Domestic Heating SE 105
Domestic Hot Water Systems
Performance Characteristics of a Thermosyphon Solar Domestic Hot Water System SE 193
Dominques, L. P. Fabrication, Testing, and Evaluation of Prototype Fluidic Capillary Pyrometer Systems DS 308
Donald, J. K. Threshold and Low-Rate Fatigue Crack Growth of a NioMoV Rotor Steel MT 104
Doner, M. A Statistical Simulation Model of Miner's Rule MT 112
Dornfeld, D. The Potential for Industrial Energy Conservation in California I 52
Dornfeld, D. A. *(reviewer)* Manufacturing Systems Engineering (BR) DS 423; Quantitative Relationships for Acoustic Emission from Orthogonal Metal Cutting I 330; Single Grit Simulation of the Abrasive Machining of Wood (80-WA/PROD-2) I 1
Doroff, S. W. Design and Performance of Compliant Thrust Bearings With Spiral-Groove Membranes on Resilient Supports (80-C2/Lub-36) L 373; (D) L 385, 386; (AC) L 386; Dynamic Characteristics of a High-Speed Rotor With Radial and Axial Foil-Bearing Supports (80-C2/Lub-35) L 361; (D) L 370, 371; (AC) L 371
Doss, E. Two-Dimensional Performance Analysis and Design of MHD Channels F 307
Double-Diffusive Instabilities
Double Diffusive Instability in a Vertical Layer of a Porous Medium (TN) HT 179
Dowell, E. H. *(author & editor)* A Modern Course in Aeroelasticity (BR) MD 261
Dowson, D. The History of Tribology in America L 323
Drachman, B. Stability of a Heavy Column With an End Load (BN) AM 668
Drag
Drag on a Droplet in Translating Fluctuating Flow (BN) AM 436
Effect of Wind-Tunnel Walls on the Drag of a Sphere F 461
Evaluation of Vehicle Drag Parameters from Coast-down Experiments Conducted Under Nonideal Environmental Conditions F 133; (D) F 140; (AC) F 141
Wake Structure of Typical Automobile Shapes F 162
Drag Calculations
Drag Calculations for Vehicles in Very Long Tubes From Turbulent Flow Theory F 361
Drag Forces
Nonlinear Static Analysis of Deep Ocean Mining Pipe—Part I: Modeling and Formulation (80-Pet-48) ERT 11; Part II: Numerical Studies (80-Pet-49) ERT 18
Drag-Link Driven Cams
Design and Evaluation of Drag-Link Driven Cams (80-DET-38) MD 592
Drag Reducing Polymers
Drag Reducing Polymer in Helicoidal Flow F 491
A Photographic Study of Cavitation in Jet Flow (D) (AC) F 371
Drag Reduction
Viscous Flow Drag Reduction (BR) F 485
Drago, R. J. The Analytical and Experimental Evaluation of Resonant Response in High-Speed, Lightweight, Highly Loaded Gearing (80-C2/DET-22 MD 346; Endurance and Failure Characteristics of Modified Vasco X-2, CBS 600 and AISI 9310 Spur Gears (80-C2/DET-58) MD 506; (D) MD 514; (AC) MD 514, 515; Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) MD 127; (D) MD 132; (AC) MD 133
Drew, D. A. Phase Distribution Mechanisms in Turbulent Two-Phase Flow in Channels of Arbitrary Cross Section F 583
Dreyer, W. On Thermodynamics and Kinetic Theory of Ideal Rubber Membranes AM 345
Drilling
On-Line Hole Quality Evaluation for Drilling Composite Material Using Dynamic Data (80-WA/PROD-16) I 119
Potential Advantages to Water Jet Drilling for Use in In-Situ Coal Gasification Processes (80-Pet-76) ERT 147
Drills
Drill Stem Steels for Use in Geothermal Environments ERT 159
Dring, R. P. Measurement of Turbine Rotor Blade Flows P 400
Drive Components
Constrained Fatigue Life Optimization of a Nasvytis Multiroller Tractor Drive (80-C2/DET-78) MD 423; (D) MD 428; (AC) MD 429
Drive Systems
Effect of Geometry and Operating Conditions on Spur Gear System Power Loss (80-C2/DET-39) MD 151
Driven Machines
Adaption of Continuously Variable Transmissions to the Characteristic of a Driven Machine by Bicoupled Planetary Transmissions (80-C2/DET-92) MD 41
Driven Rotary Tools
Some Investigations Into Machining With Driven Rotary Tools I 469
Droplet Dynamics
Droplet Dynamics in Creeping Flows (81-APM-29) AM 224
Droplet Evaporation
Droplet Evaporation in High Temperature Environments (79-WA/HT-6) HT 86
Droplets
Drag on a Droplet in Translating Fluctuating Flow (BN) AM 436
A Three-Dimensional Air-Vapor-Droplet Local Interaction Model for Spray Units HT 514
Drops
Evaporation of Small Water Drops Containing Salt in a High Pressure Steam Environment (76-WA/FE-35) F 112
Dropwise Condensation
Effect of Knudsen Number on Dropwise Condensation HT 606
Steam Condensation on Various Gold Surfaces (81-HT-15) HT 685
Drucker, D. C. On Stress-Strain Relations Suitable for Cyclic and Other Loading (81-WA/APM-6) AM 479
Dry Bearings
Contact Temperature in Dry Bearings. Three Dimensional Theory and Verification (80-C2/Lub-40) L 243; (D) (AC) L 252
Dry Cooling Towers
Modeling of a Rotary Dry Cooling Tower (80-HT-95) HT 715
Dry Poro-Elastic Body
Infiltration of a Fluid Into a Dry Poro-Elastic Body AM 258
Dry Porous Rock
Closed-Form Approximations for Forces on Conical Penetrators Into Dry Porous Rock AM 971
A Model to Estimate Forces on Conical Penetrators Into Dry Porous Rock (81-APM-15) AM 25
Drzewiecki, T. M. Fabrication, Testing, and Evaluation of Prototype Fluidic Capillary Pyrometer Systems DS 308; A High Order, Lumped Parameter, Jet Dynamic Model for the Frequency Response of Laminar Proportional Amplifiers DS 317; A Perspective on the Past, Present, and Future of Fluidics (F) DS 301
D'Souza, A. F. Fatigue Damage of the Locomotive Suspension Elements Under Random Loading (80-WA/DE-7) MD 871
Dual-Fluid Cycle
An Evaluation of Steam Injected Combustion Turbine Systems (80-GT-51) P 13; (D) P 17; (AC) P 18
Dual Storage Tanks
Experimental Comparison of Control Strategies for Solar Energy Systems Incorporating Dual Storage Tanks SE 47
Dubowsky, S. The Application of Finite Element Methods to the Dynamic Analysis of Flexible Spatial and Co-Planar Linkage Systems (80-DET-87) MD 643
Duct Flows
The Numerical Prediction of Developing Turbulent Flow in Rectangular Ducts F 445; (D) F 454; (AC) F 455
Ductile Fracture
Ductile Fracture of Pipes and Cylindrical Containers With a Circumferential Flaw PVT 130
Stable Phase of Ductile Fracture in Two and Three Dimensions, Final Stretch Model (81-WA/APM-5) AM 500
Ductile Materials
A Critical Analysis of Crack Growth in Creep (D) (AC) MT 284, 285
On the Motion of an Axial Through Crack in a Pipe PVT 281
Ducts
Numerical Techniques in Linear Duct Acoustics—A Status Report (80-WA/NC-2) I 270
A Study of Some Turbulence Models for Flow and Heat Transfer in Ducts of Annular Cross-Section HT 146
A Surface Integral Numerical Solution for Laminar Developed Duct Flow AM 695
Dudgragne, G. Analysis Method for Both Internal Stresses and Microstructural Effect Under Pure Rolling Fatigue Conditions L 521
Duffey, R. B. Experimental and Analytical Investigation of a Natural Circulation System with Parallel Loops HT 645; A Nondimensional Analysis of Boiling Dry a Vertical Channel with a Uniform Heat Flux HT 667
Duffy, J. Determination of Extreme Distances of a Robot Hand—Part 1: A General Theory (80-DET-57) MD 631; Part 2: Robot Arms With Special Geometry (80-DET-58) MD 778
Dugundji, J. Resonant Whirling of Aircraft Propeller-Engine Systems AM 929

Dukkipati, R. V. Kinematic Analysis of Spatial Mechanisms Using Train Components **MD 823**

Duncan, D. R. A State Variable Analysis of Inelastic Deformation of Thin Walled Tubes **MT 305**

Dundurs, J. An Educational Elasticity Problem With Friction. Part 1: Loading, and Unloading for Weak Friction (81-WA/APM-19) **AM 841**; Heat Conduction Through a Flat Punch **AM 871**; Planar Hertz Contact With Heat Conduction **AM 540**

Durao, D. F. G. A Round Jet Normal to a Crossflow (80-WA/FE-18) **F 142**

Durelli, A. J. Quasi-Square Hole With Optimum Shape in an Infinite Plate Subjected to In-Plane Loading (80-WA/DE-3) **MD 866**; Stress Distribution Around a Circular Hole in Square Plates, Loaded Uniformly in the Plane, on Two Opposite Sides of the Square (BN) **AM 203**

Duva, J. Thickness Effects Are Minor in the Energy-Release Rate Integral for Bent Plates Containing Elliptic Holes or Cracks **AM 320**

Dwell-Rise-Dwell Cams
Assessment of the Dynamic Quality of a Class of Dwell-Rise-Dwell Cams (80-DET-83) **MD 793**

Dynamic Aeroelasticity
A Modern Course in Aeroelasticity (BR) **MD 261**

Dynamic Behavior
Analysis of a Pneumatically Coupled Cam-Actuated Mechanism **DS 290**

Dynamic Control
A New Feedback Method for Dynamic Control of Manipulators **DS 119**
One Engineering Concept of Dynamic Control of Manipulators **DS 108**

Dynamic Crack Propagation
The Effect of Crack-Tip Plasticity on the Determination of Dynamic Stress-Intensity Factors by the Optical Method of Caustics **AM 302**

Dynamic Data System
On-Line Hole Quality Evaluation for Drilling Composite Material Using Dynamic Data (80-WA/PROD-16) **I 119**

Dynamic Forces
Investigation Into the Influence of Dynamic Forces on the Tribological Behavior of Bodies in Rolling/Sliding Contact With Particular Regard to Surface Corrugations (80-C2/Lub-52) **L 26**

Dynamic Fracture
Fracture Mechanics (BR) **MT 77**

Dynamic Load
Analytical/Experimental Correlation of a Nonlinear System Subjected to a Dynamic Load **PVT 94**
Dynamic Continuous Path Synthesis of Industrial Robots Using ADAMS Computer Program (80-DET-41) **MD 602**
Effects of Moving Speeds of Dynamic Loads on the Deflections of Gear Teeth **MD 357**
An Extended Model for Determining Dynamic Loads in Spur Gearing (80-C2/DET-90) **MD 398**
A Numerical Solution to the Dynamic Load, Film Thickness, and Surface Temperatures in Spur Gears, Part I Analysis **MD 177**; Part II Results **MD 188**
Optimization of High Speed Geneva Mechanisms (80-DET-56) **MD 821**

Dynamic Magnifications
Factors Influencing Instability and Resonances in Geared Systems (80-C2/DET-8) **MD 372**

Dynamic Motion
A Sensitivity Study on Numerical Analysis of Dynamic Girth Crack Propagation (80-C2/PVP-107) **PVT 189**

Dynamic Phenomena
Thermoelastic and Dynamic Phenomena in Seals (80-C2/Lub-9) **L 253**

Dynamic Problems
A Structural Priority Approach to Fluid-Structure Interaction Problems **PVT 142**

Dynamic Response
Dynamic Response of a Beam With a Geometric Nonlinearity **AM 404**

Dynamic Shell Code
Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (TB) **PVT 200**

Dynamic Simulation
On the Dynamic Simulation of Large Nonlinear Mechanical Systems. Part 1: An Overview of the Simulation Technique. Substructuring and Frequency Domain Considerations (80-DET-66) **MD 849**; Part 2: The Time Integration Technique and Time Response Loop (80-DET-67) **MD 857**

Dynamic Stability
Dynamic Stability of Truncated Conical Shells Under Pulsating Torsion **AM 391**

Dynamic Systems
About Bilinear Systems and This Issue (F) **DS 75**
Active Vibration Control of a Flexible Rotor on Flexibly-Mounted Journal Bearings (81-WA/DSC-5) **DS 383**
Advances in Transportation Technology: 1981 (F) **DS 170**
Analysis of a Pneumatically Coupled Cam-Actuated Mechanism **DS 290**
Analysis, Synthesis and Design of Hydraulic Servosystems and Pipelines (BR) **DS 73**
Application of Model Reference Adaptive Techniques to a Class of Nonlinear Systems **DS 158**
The Bilinear, Modal State Equations for Age-Dependent Growth Control **DS 89**
A Comparison of the Stability and Curving Performance of Radial and Conventional Rail Vehicle Trucks **DS 191**
Control of Force Distribution in Robotic Mechanisms Containing Closed Kinematic Chains **DS 134**
Control Systems for Automotive Vehicle Fuel Economy: A Literature Review **DS 173**
Design Sensitivity Analysis of Planar Mechanism and Machine Dynamics (80-DET-6) **MD 560**
Development of an Electrofluidic Rate Sensor **DS 303**
Developments in Power Fluidics for Application in Nuclear Plant **DS 342**
A Diagnosis Method for Linear Stochastic Systems With Parametric Failures **DS 28**
A Discrete-Time Adaptive Filter for Stochastic Distributed Parameter Systems **DS 266**
Discrete-Time Equivalent of Continuous-Time Filtering Process **DS 417**
Dynamic System Response Technology Transfer Via Computer Modeling (80-C2/DET-80) **MD 281**
Dynamics of Mechanisms and Machine Systems in Accelerating Reference Frames **DS 385**
On the Efficacy of Nonlinear Control in Uncertain Linear Systems **DS 95**
Energy-Based Modeling and Quasi Coordinates **DS 5**
Entering the Third Decade of Fluidics—An Academic Perspective (F) **DS 301**
Estimating Reachable Sets (TB) **DS 420**
Evaluation of Time-Duration Dependent Wheel Load Criteria for Wheelclimb Derailment (80-WA/DSC-21) **DS 219**
Experimental Investigation of Freight Car Lateral Dynamics **DS 201**
Experimental Results in the Modeling and Control of a Small Furnace **DS 370**
Fabrication, Testing, and Evaluation of Prototype Fluidic Capillary Pyrometer Systems **DS 308**
A First Principles Model for Steam Turbine Control Analysis **DS 61**
Flood Protection by Vortex Valves **DS 338**
A Fluidic, Hydraulic Servovalve **DS 331**
Fluidics in Aircraft Engine Controls **DS 324**
Frequency Response of Blocked Annular Fluid Transmission Lines **DS 366**
Guideway-Suspension Tradeoffs in Rail Vehicle Systems **DS 237**
A High Order, Lumped Parameter, Jet Dynamic Model for the Frequency Response of Laminar Proportional Amplifiers **DS 317**
Hybrid Position/Force Control of Manipulators **DS 126**
Improved Statistical Linearization for Analysis and Control of Nonlinear Stochastic Systems—Part I: An Extended Statistical Linearization Technique **DS 14**; Part II: Application to Control System Design **DS 22**
Influence of Wheel/Rail Contact Geometry on Large Amplitude Wheelset Equations of Motion **DS 211**
On the Inverse of a Special Class of Bilinear Systems (TB) **DS 103**
Lateral Dynamics of a Rail Transit Vehicle: A Comparison of Experimental and Theoretical Results **DS 39**
Linear Fluid Resistance Using Switching Valves and a Tank **DS 352**
Longitudinal Instability in Braked Landing Gear **DS 259**
Manufacturing Systems Engineering (BR) **DS 423**
A Mathematical Model of Hand Transfer Motion for Application to Manipulator Control **DS 152**
Measurements and Observations on Wheelset Lateral Dynamics of Locomotives on Tangent Track **DS 375**
Model Following Control of Gas Turbine Engines **DS 285**
Model Reference Adaptive Controllers and Stochastic Self-Tuning Regulators—A Unified Approach **DS 404**
Modeling and Dynamic Response of Maglev Vehicles Subjected to Crosswind Gusts (80-WA/DSC-8) **DS 251**
Modeling of Nonholonomic Dynamic Systems With Applications (81-APM-12) **AM 177**
Motion of a Bored Sphere in a Spinning Spherical Cavity **DS 389**
A New Feedback Method for Dynamic Control of Manipulators **DS 119**
Nonlinear State Estimation and Feedback Control of Nonlinear and Bilinear Distributed Parameter Systems **DS 78**
Nonstationary Response of Vehicles on Rough Ground—A State Space Approach **DS 245**
A Note on Avoidance Control **DS 69**
A One Dimensional Crystal With Nearest Neighbors Coupled Through Their Velocities (TB) **DS 293**
One Engineering Concept of Dynamic Control of Manipulators **DS 108**
Optimum Path Planning for Mechanical Manipulators **DS 142**
Optimum Vehicle Suspensions Minimizing RMS Rattlespace, Sprung-Mass Acceleration and Jerk (81-WA/DSC-23) **DS 228**; (Er) **DS 351**
Payoff Sensitivity of Linear Quadratic Differential Games to Parameter Change **DS 36**
A Perspective on the Past, Present, and Future of Fluidics (F) **DS 301**
A Perspective on Robotics Research and This Issue (F) **DS 106**
A Procedure to Generate Liapunov Functional For Distributed Parameter Systems (BN) **AM 188**
A Proportional Piezoelectric Electro-Fluidic Pneumatic Valve Design **DS 361**
Reflections on the Past Twenty Years in Fluidics (F) **DS 299**
Resonances and Instabilities in Dynamic Systems Incorporating a Cam **MD 914**
Space Sampling Effects in Nonlinear Distributed System Stability **DS 54**
Stability and Curving Mechanics of Rail Vehicles (80-WA/DSC-15) **DS 181**
Stable Linear Systems Simplification Via Padé Approximations to Hurwitz Polynomials **DS 279**
State Models of Dynamic Systems: A Case Study Approach (BR) **DS 297**
Two Decades of Fluidics (F) **DS 299**
Use of Lead/Lag Approximations in Modeling Thermal Regenerator Systems **DS 49**
Volterra Series Expansion for Bilinear Systems in a Nonlinear Feedback Loop **DS 84**
Vortex Amplifiers for Pipeline Protection **DS 358**

Dynamical Loading
Plane Elastic Waves Generated by Dynamical Loading Applied to Edge of Circular Hole (81-WA/APM-4) **AM 577**

Dynamical Systems
Dynamical Systems and Evolution Equations: Theory and Applications (BR) **AM 460**

Dynamics
16th ASME Mechanisms Conference (CR) **MD 550**
A Comparison of Multifrequency Techniques for Measuring the Dynamics of Squeeze-Film Bearings (80-C2/Lub-46) **L 137**
New Approaches to Nonlinear Problems in Dynamics (BR) **AM 453**

E

Earthquake Response
Earthquake Response of Deformable Liquid Storage Tanks (80-C2/PVP-79) **AM 411**
Eastman Kodak Company *(reviewer)* Lubrication Fundamentals (Mechanical Engineering Series, Vol. 3) (BR) **L 471**
Eaton, J. K. A New Probe for Measurement of Velocity and Wall Shear Stress in Unsteady, Reversing Flow **F 478**
Eccentricity
Tube Wall Temperatures of an Eccentrically Located Horizontal Tube within a Narrow Annulus with Tube Contact (TN) **HT 186**
Ecer, A. Transonic Flow Computations in Cascades Using Finite Element Method (81-GT-4) **P 657**
Eckert, E. R. G. Pioneering Contributions to Our Knowledge of Convective Heat Transfer (80-HT-137) **HT 409**
Ecoff, R. A., Jr. Recent Advances in the ASME Section VIII Division 1 and 2 Pressure Vessel Codes **PVT 119**
Edge Conditions
Nonlinear Theory for Flexural Motions of Thin Elastic Plate—Part 1: Higher-Order Theory **AM 377**; Part 2: Boundary-Layer Theory Near the Edge **AM 383**
Editorials
Methods of Predicting Material Life in Fatigue **MT 81**
Retreat From the Future: The Administration's Energy Policy **SE 81**
Technical Papers **MD 1**
Edstrom, C. R. The Vibrating Beam With Nonhomogeneous Boundary Conditions (BN) **AM 669**
Edwards, P. R. The Development and Testing of the Space Shuttle Reaction Control System (78-WA/Aero-20) **I 137**
Eftekhar, J. Conduction of Heat Across Rectangular Cellular Enclosures **HT 591**
Eguchi, K. A Comparison of Cold and Reacting Flows Around a Bluff-Body Flame Stabilizer **F 328**
Ehrich, F. F. Editorial **MD 1**
Elber, R. J. Evaluation of Tensile Failure of Girth Weld Repair Grooves in Pipe Subjected to Offshore Laying Stresses (80-Pet-74) **ERT 48**
Eichelberger, E. C. Point Admittance of Cylindrical Shells With and Without Ring-Stiffening (80-WA/NC-5) **I 293**
Eichorn, R. Boiling Burnout During Crossflow over Cylinders, beyond the Influence of Gravity **HT 478**
Eigenvalue Extraction
Calculating Natural Frequencies With Extended Tuplin's Method (80-C2/DET-48) **MD 379**
Eigenvalue Problems
The Symmetric Eigenvalue Problem (BR) **AM 988**
Eisenberg, M. A. A Theory of Multiaxial Anisotropic Viscoplasticity (81-APM-21) **AM 276**
Eisenstatt, L. R. Creep Rupture Behavior of Selected Turbine Materials in Air, Ultra-High Purity Helium, and Simulated Closed Cycle Brayton Helium Working Fluids (80-GT-173) **P 331**
Elas, N. S., Jr. The Influence of Linear and Rotating Motions on the Friction of Polymers (80-C2/Lub-44) **L 503**; (D) **L 507**; (AC) **L 508**; The Wear of Polymers Sliding on Polymeric Films Deposited on Rough Surfaces (80-C2/Lub-24) **L 266**
Ekchian, A. Soot Formation in a Turbulent Swirl Stabilized Laboratory Combustor (80-GT-77) **P 49**
Elastic
Finite-Element Solution of Elastic-Plastic Boundary-Value Problems (81-APM-17) **AM 69**
Elastic Bars
Theoretical and Experimental Investigation of Stress Waves at a Junction of Three Bars (81-APM-16) **AM 148**
Elastic Beams
Steady Motion of an Elastic Beam Across a Rigid Step (81-WA/APM-7) **AM 606**
Elastic Bodies
Contact Pressures on Closely Conforming Elastic Bodies **AM 543**
The Role of Elastic Tangential Compliance in Oblique Impact (80-C2/Lub-22) **L 74**
Elastic Composites
Harmonic Waves in Fiber-Reinforced Orthotropic Elastic Composites (BN) **AM 967**
Elastic Constraints
Vibrations of Free Circular Plates Having Elastic Constraints and Added Mass Distributed Along Edge Segments (BN) **AM 196**
Elastic Contact
A Finite Element Method for the Elastic Contact Problems **I 458**
Elastic Cylinders
Contact Stresses Between Elastic Cylinders: A Comprehensive Theoretical and Experimental Approach (80-C2/Lub-29) **L 40**
Elastic Cylindrical Shells
Nonlinear Response of an Elastic Cylindrical Shell to a Transient Acoustic Wave (81-APM-10) **AM 15**
Elastic Deformation
A Correct Definition of Elastic and Plastic Deformation and Its Computational Significance **AM 35**; (Er) **AM 686**; (D) **AM 983**; (AC) **AM 984**
Elastic Foundations
Response of Periodic Systems to a Moving Load **AM 813**
Elastic Half Planes
The Contact Problem for a Rigid Inclusion Pressed Between Two Dissimilar Elastic Half Planes **AM 104**
Heat Conduction Through a Flat Punch **AM 871**
Elastic Half Space
Elastodynamic Stress-Intensity Factors for a Crack Near a Free Surface **AM 539**
Vibration of an Elastic Circular Plate on an Elastic Half Space—A Direct Approach **AM 161**
Elastic Inclusion
Analysis for an Embedded Ice Pressure Sensor **ERT 87**
Elastic Instability
Elastic Instability of a Heated Annular Plate Under Lateral Pressure **AM 390**
Elastic Layers
The Rolling Contact of Two Elastic-Layer-Covered Cylinders Driving a Loaded Sheet in the Nip **AM 589**
Elastic Materials
On Branched, Interface Cracks (81-APM-20) **AM 529**
Elastic Models
Large Deformation Analysis of Some Soft Biological Tissues **BE 73**
Elastic Moduli
The Effective Elastic Moduli of Porous Granular Rocks **AM 803**
Elastic-Plastic Analysis
Approximate Elastic-Plastic Analysis of Intersecting Equal Diameter Cylindrical Shells (TB) **PVT 111**
Elastic-Plastic Deformation
Finite Elastic-Plastic Deformation of a Rotating Hollow Cylinder (BN) **AM 666**
Elastic-Plastic Material
Crack-Tip Stress and Strain Singularity in Thermally Loaded Elastic-Plastic Material (BN) **AM 428**
Energy-Release Rate in Elastic-Plastic Fracture Problems (81-WA/APM-21) **AM 825**
Elastic-Plastic Mechanics
The Inelastic Line-Spring: Estimates of Elastic-Plastic Fracture Mechanics Parameters for Surface-Cracked Plates and Shells (80-C2/PVP-109) **PVT 246**
Elastic-Plastic Toughness
Evaluation of Radiation Damage in Reactor Pressure Vessel Steel by Elastic-Plastic Fracture Mechanics **MT 276**
Elastic-Plastic Transition
Constitutive Equations of Elastoplastic Materials With Anisotropic Hardening and Elastic-Plastic Transition **AM 297**
Elastic Plates
Exact Equations for the Large Inextensional Motion of Elastic Plates **AM 109**
On a One-Dimensional Theory of Finite Torsion and Flexure of Anisotropic Elastic Plates **AM 601**
Theories for Elastic Plates Via Orthogonal Polynomials **AM 900**
Elastic Pulses
Propagation of Elastic Pulses and Acoustic Emission in a Plate Part 1: Theory (81-APM-4) **AM 125**; Part 2: Epicentral Responses (81-APM-5) **AM 133**; Part 3: General Responses (81-APM-6) **AM 139**
Elastic Response
A Finite Element Model for Elastic and Slip Response of Fusion Magnets (D) **PVT 127**
Elastic Ring
The Deformation of a Thin, Incomplete, Elastic Ring in a Frictional Channel (81-WA/APM-22) **AM 895**
Elastic Sheets
Folding of Elastica-Similarity Solutions (BN) **AM 199**
Elastic Stresses
Approximate Elastic Stresses in Pipe Junctions with Chamfer Corners (TB) **PVT 107**
Approximate Elastic Stresses in a Tee Branch Pipe Connection Under Internal Pressure (TB) **PVT 104**
Elastic Systems
Amplitude Incremental Variational Principle for Nonlinear Vibration of Elastic Systems (81-WA/APM-26) **AM 959**
An Exact Condensation Procedure for Chain-Like Structures Using a Finite Element-Transfer Matrix Approach (80-C2/DET-123) **MD 295**
Elastic Theory
On an Elastic Theory of Friction (BN) **AM 438**
Elastic Waves
Diffraction of Elastic Waves by a Surface Crack on a Plate **AM 570**
Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: *P* and *SV* Motion (81-APM-18) **AM 155**
Elastic Zone
A Semi-Empirical Solution to Upset Forging **I 478**
Elasticity
Aluminum Matrix Composite Elasticity Measured Ultrasonically (BN) **AM 985**
A Diagonally Dominant Solution for the Cylinder End Problem (81-WA/APM-12) **AM 878**
An Educational Elasticity Problem With Friction. Part 1: Loading, and Unloading for Weak Friction (81-WA/APM-19) **AM 841**
Elastin
The Retained Elasticity of Elastin Under Fixation Agents (TB) **BE 121**
Elastohydrodynamic Contact
An Experimental Evaluation of the Hamrock and Dowson Minimum Film Thickness Equation for Fully Flooded EHD Point Contacts (80-C2/Lub-38) **L 284**; (D) **L 294**
Elastohydrodynamic Lubrication
Elastohydrodynamic Lubrication of Offset O-Ring Rotary Seal (80-C2/Lub-7) **L 414**; (D) **L 424, 425, 426**; (AC) **L 427**
Inverse Solution of Reynolds' Equation of Lubrication Under Point-Contact Elastohydrodynamic Conditions **L 539**
The Isothermal Elastohydrodynamic Lubrication of Spheres **L 547**; (D) (AC) **L 557**
Some Limitations in Applying Classical EHD Film Thickness Formulas to a High-Speed Bearing (80-C2/Lub-13) **L 295**; (D) **L 301**; (AC) **L 303**
Elastohydrodynamics
Elastohydrodynamics Lubrication of Hypoid Gears (80-C2/DET-47) **MD 195**
Elastomers
A Nonlinear Theory of Viscoelasticity for Application to Elastomers (D) **AM 682**; (AC) **AM 683**
Elastoplastic Behavior
Inelastic Dynamic Response of Rectangular Plates by Finite Elements (BN) **AM 441**
Elasto-plastic Design
Rotating Elasto-plastic Interference Fits (80-C2/DET-11) **MD 61**
Elastoplastic Materials
Constitutive Equations of Elastoplastic Materials With Anisotropic Hardening and Elastic-Plastic Transition **AM 297**
Constitutive Equations of Elastoplastic Materials With Elastic-Plastic Transition (D) **AM 211**
Elban, W. L. Aluminum Matrix Composite Elasticity Measured Ultrasonically (BN) **AM 985**
Elbow-Pipe Experiments
Pressure Transient Analysis of Elbow-Pipe-Experiments Using the PTA-2 Computer Code (80-C2/PVP-22) **PVT 33**
Elbows
Pulse Propagation in Fluid-Filled Elastic Curved Tubes **PVT 43**

Electric Heat Source
Simulation of Thermal Performance of Solar Collector Arrays (81-WA/Sol-1) **SE 258**
Electrical Power
Heat-Exchanger Effectiveness in Thermoelectric Power Generation **HT 693**
Mini-OTEC Operational Results **SE 233**
Electrochemical Machining
On Some Aspects of Surface Formation in ECM **I 341**
Tooling Design for ECM—A Finite Element Approach (80-WA/Prod-9) **I 183**
Electrofluidic Rate Sensors
Development of an Electrofluidic Rate Sensor **DS 303**
Electromechanical Properties
Oscillatory Compressional Behavior of Articular Cartilage and Its Associated Electromechanical Properties **BE 280**
Electro-Pneumatic Valves
A Proportional Piezoelectric Electro-Fluidic Pneumatic Valve Design **DS 361**
Elevated Temperature Solar Code
Material Property Data and Their Use in Design and Analysis for an Elevated Temperature Solar Code **SE 345**
Elevated Temperatures
Experience With Simplified Inelastic Analysis of Piping Designed for Elevated Temperature Services (80-C2/NE-15) **PVT 267**
Elevation Step
Heat Transfer from a Plate Elevated above a Host Surface and Washed by a Separated Flow Induced by the Elevation Step **HT 441**
Elfar, N. A Critical Analysis of Crack Growth in Creep (D) (AC) **MT 264, 265**
Elghobashi, S. E. Prediction and Measurement of Mass, Heat, and Momentum Transport in a Nonreacting Turbulent Flow of a Jet in an Opposing Stream **F 127**
El Haddad, M. H. Fatigue Life Prediction of Smooth and Notched Specimens Based on Fracture Mechanics **MT 91**
Elishakoff, I. On the Error That Can Be Induced by an Ergodicity Assumption (BN) **AM 654**
Elkalish, M. S. Application of the Semi-Loof Thin Shell Element to the Analysis of Aircraft Engine Structures **P 511**
Ellen, C. H. Reexamination of Unsteady Fluid Dynamic Forces on a Two-Dimensional Finite Plate at Small Mach Numbers (D) (AC) **AM 962**
Elliptic Holes
Thickness Effects Are Minor in the Energy-Release Rate Integral for Bent Plates Containing Elliptic Holes or Cracks **AM 320**
Elliptical Cracks
An Embedded Elliptical Crack, in an Infinite Solid, Subject to Arbitrary Crack-Face Tractions **AM 88**
Elliptical Whirling
Blade Excitation by Elliptical Whirling in Viscous-Damped Jet Engines (80-GT-168) **P 326**
Ellyin, F. Acceleration of Unbalanced Rotor Through the Resonance of Supporting Structure (81-APM-24) **AM 419**; A Criterion for Low-Cycle Fatigue Failure Under Biaxial States of Stress **MT 1**
Elongation
A Comparison of Constitutive Relations Incorporating Strain-Rate Hardening (TB) **MT 261**
Elrod, H. G. A Cavitation Algorithm (80-C2/Lub-54) **L 350**; (D) (AC) **L 354**
Elsawaf, A. Application of the Semi-Loof Thin Shell Element to the Analysis of Aircraft Engine Structures **P 511**
El-Shaarawi, M. A. I. Developing Laminar Free Convection in an Open Ended Vertical Annulus with a Rotating Inner Cylinder **HT 552**
Elston, M. J. H. Pneumatic Rupture of a Brittle Pipe: The Depressurization Transient Adjacent to the Ruptured Zone **PVT 287**
Embedded Cracks
Stress-Intensity Factor for a Three-Dimensional Rectangular Crack **AM 309**
Emery, A. F. Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (TB) **PVT 200**; On the Motion of Axial Through Crack in a Pipe **PVT 281**; The Numerical Prediction of Developing Turbulent Flow in Rectangular Ducts **F 445**; (D) **F 454**; (AC) **F 455**; A Sensitivity Study on Numerical Analysis of Dynamic Girth Crack Propagation (80-C2/PVP-107) **PVT 169**; The Use of the Split Ring in Modeling Ductile Axial Crack Extension in Pipes **PVT 151**
Emission Signals
Quantitative Relationships for Acoustic Emission from Orthogonal Metal Cutting **I 330**
Emissions
The Influence of Premixed Combustion Flame Stabilizer Geometry on Flame Stability and Emissions (81-GT-26) **P 749**
NO_x Removal Process by Injection of NH_3 and H_2O_2 in Gas Turbine Exhaust Gas **P 589**
Empirical Techniques
Elementary Finite Element Method (BR) **MD 685**
Encapsulation
Glass as Encapsulation for Low-Cost Photovoltaic Solar Arrays **SE 221**
End Loads
Stability of a Heavy Column With an End Load (BN) **AM 668**
End Problems
A Diagonally Dominant Solution for the Cylinder End Problem (81-WA/APM-12) **AM 876**
End Wall Cooling
Influence of Mach Number and End Wall Cooling on Secondary Flows in a Straight Nozzle Cascade (80-GT-52) **P 257**; (D) **P 263**; (AC) **P 264**
Endochronic Theory
Endochronic Description of Cyclic Hardening Behavior for Metallic Materials **MT 212**
On the Uniqueness and Stability of Endochronic Theory (D) **AM 985**; (AC) **AM 986**
Endothelial Cells
The Dynamic Response of Vascular Endothelial Cells to Fluid Shear Stress **BE 177**
Vascular Endothelial Morphology as an Indication of the Pattern of Blood Flow **BE 172**
Endothelial Injuries
Diffusion of Macromolecules Across the Arterial Wall in the Presence of Multiple Endothelial Injuries **BE 197**
Endurance Characteristics
Endurance and Failure Characteristics of Modified Vasco X-2, CBS 600 and AISI 9310 Spur Gears (80-C2/DET-58) **MD 506**; (D) **MD 514**; (AC) **MD 514, 515**
Endurance Limit
Measuring the Actual Endurance Limit of One Specimen Using a Nondestructive Method **MT 71**
Energy
Conserving Energy in Saudi Arabia **P 519**
Design Procedure and Application of Solar-Assisted Series Heat Pump Systems **SE 135**
McGraw-Hill Encyclopedia of Energy (BR) **ERT 200**
The Potential for Industrial Energy Conservation in California **I 52**
Review—Basic Research Needs in Fluid Mechanics **F 509**
Solar Energy Handbook (BR) **SE 362**
One Viewpoint Concerning Unit Size in the Development of Wind Turbines **SE 306**
Energy Balance
A Mathematical Model for Heat Transfer in Combustion Chambers of Steam Generators **P 545**
Energy-Based Modeling
Energy-Based Modeling and Quasi Coordinates **DS 5**
Energy Conservation
Control Systems for Automotive Vehicle Fuel Economy: A Literature Review **DS 173**
Energy Conversion Systems
A Numerical Solution for Gas-Particle Flows at High Reynolds Numbers (81-WA/APM-10) **AM 465**
Energy Loss
Minimum Energy-Loss Control of Electro-and Hydro-Mechanical Modulated Convertor Drives (80-C2/DET-42) **MD 48**
Energy Methods
Fluid Power With Applications (BR) **F 484**
Energy Policy
Retreat From the Future: The Administration's Energy Policy (Ed) **SE 61**
Energy Release Rate
Energy-Release Rate and Crack Kinking Under Combined Loading **AM 520**
Energy-Release Rate in Elastic-Plastic Fracture Problems (81-WA/APM-21) **AM 825**
On Energy-Release Rates for a Plane Crack (81-WA/APM-3) **AM 525**
Note on the Energy-Release Rate for a Crack Starting From the Apex of a Wedge (BN) **AM 194**
Energy Resources Technology
Analysis of Motions of a Catamaran in Arbitrary Heading Waves **ERT 219**
Biogasification of Municipal Solid Wastes **ERT 180**
Commercial Scale Equipment for Coal Conversion Processes **ERT 186**
The Design and Construction of Beaufort Sea Drilling Islands—Sag Delta 7 and 8 **ERT 208**
Design of Discharge Piping for Pressure Relief Systems (80-Pet-59) **ERT 190**
Design and Evaluation of Evaporating Lens Direct Contact Heat Exchangers **ERT 128**
Development of Affinity Relations for Modeling Characteristics of Check Valves (80-Pet-36) **ERT 196**
Drill Stem Steels for Use in Geothermal Environments **ERT 159**
Duluth Co-Disposal Facility **ERT 262**
The Effect of Magnus Force on the Scale Deposition in Geothermal Systems (TB) **ERT 352**
Engine Fuels From Biomass (81-DGP-4) **ERT 344**
Enhanced Oil Recovery by Flooding With Dilute Aqueous Chemical Solutions **ERT 285**
Europe's Offshore Oil & Gas (BR) **ERT 200**
Field and Laboratory Studies for Evaluating Submarine Pipeline Frictional Resistance **ERT 250**
Field Results From a Linked Vertical Well UCG Test in Deep, Thin-Seam Bituminous Coal **ERT 277**
Heat Transfer to Oil Shale in a Closely Spaced Bundle as an Approximation to a Packed Bed (79-WA/HT-34) **ERT 307**
Jet Piercing of Oil Sands **ERT 330**
Laminar-Turbulent Transition in Pipeflow of Casson Model Fluids **ERT 318**
Linear Prediction Theory for Digital Simulation of Sea Waves (81-Pet-7) **ERT 243**
Long-Distance, High-Volume Transport of Coal by Slurry Pipeline (80-WRK/Pet-1) **ERT 322**
McGraw-Hill Encylopedia of Energy (BR) **ERT 200**
Model Capabilities for In-Situ Oil Shale Recovery **ERT 138**
Model Studies on Immediate Settlement Behavior of Submarine Pipelines **ERT 254**
Modeling Capabilities for the Devonian Gas Shales **ERT 270**
Modeling of Hydraulically Fractured Gas Wells Completed in Noncontinuous Lenticular Formations **ERT 153**
Modeling Requirements for Geopressured-Geothermal Reservoir Production **ERT 301**
The Natural Frequencies and Mode Shapes of Cables With Attached Masses (81-Pet-10) **ERT 237**
Oil Shale Retorting in a Bottom-Burning Retort (79-HT-3) **ERT 119**
An OTEC Pilot Plant Heat Engine **ERT 172**
Packer-Induced Stress During Hydraulic Well Fracturing **ERT 336**
Permeability Enhancement Using Explosive Techniques (80-Pet-70) **ERT 110**
Phase Change Around Insulated Buried Pipes: Quasi-Steady Method **ERT 201**
Potential Advantages to Water Jet Drilling for Use in In-Situ Coal Gasification Processes (80-Pet-76) **ERT 147**
Propagation and Extinction of Combustion Fronts in Crushed Oil Shale (80-Pet-77) **ERT 133**
A Simple Model of Seasonal Sea Ice Growth (80-WA/HT-20) **ERT 212**; (Er) **ERT 290**
State-of-the-Art of Models for Geothermal Recovery Processes **ERT 291**
State-of-the-Art of Thermal Recovery Models **ERT 296**
System Thermodynamics of Energy Conversion Plants for Geopressured Resources (80-Pet-31) **ERT 166**
A Technical Evaluation of Modular Incinerators With Heat Recovery **ERT 265**
Vibrations of Long Marine Pipes due to Vortex Shedding (81-Pet-29) **ERT 231**; (Er) **ERT 290**
Energy Security
Solar Priorites (Ed) **SE 1**

Energy Storage
Thermal Energy Storage and Regeneration (BR) **SE 178**
Engine Blades
The Development of a Substitute Bird Model (81-GT-23) **P 725**
Engine Controls
Fluidics in Aircraft Engine Controls **DS 324**
Engine Fuels
Engine Fuels From Biomass (81-DGP-4) **ERT 344**
Engine Variables
Model Following Control of Gas Turbine Engines **DS 285**
Engineering Aspects
Glass Reinforced Plastic in Construction: Engineering Aspects By Leonard Halloway (BR) **MT 78**
Engineering Design Education
Engineering Design Education: U.S.—Retrospective and Contemporary **MD 696**
Engineering Plasticity
Engineering Plasticity by Mathematical Programming (BR) **MT 77**
Engineering Profession
Foreign Report **F 6**
Engineers
Writing for "The Audience" (80-C2/DET-125) **MD 342**
Engines
Calculation of Windmilling Characteristics of Turbojet Engines (80-GT-50) **P 1**
Enhanced Oil Recovery
Enhanced Oil Recovery by Flooding With Dilute Aqueous Chemical Solutions **ERT 285**
Enthalpy Exchange
A Mathematical Model for the Stirling Engine Cycle **P 505**
Entrainment Coefficient
The Effect of Froude Number on Entrainment in Two-Dimensional Line Plumes (81-FE-6) **F 471**
Entropy
Entropy: A New World View (BR) **SE 178**
Envelopes
A Classification of Coupler-Line Envelopes from Hinged Four-Bar Linkages (80-DET-42) **MD 750**
Equations for Four-Bar Line-Envelopes (80-DET-40) **MD 743**; (D) (AC) **MD 749**
Environmental Conditions
A Design Approach for Correlating High Temperature Fatigue Crack Growth Over a Wide Range of Parameters **MT 246**
Environmental Effects
A Statistically Based Investigation of the Environmental and Cyclic Stress Effects on Fretting Fatigue **MT 218**
Enzymes
Enzyme Engineering, Future Directions (BR) **BE 217**
Epicentral Points
Propagation of Elastic Pulses and Acoustic Emission in a Plate Part 1: Theory (81-APM-4) **AM 125**; Part 2: Epicentral Responses (81-APM-5) **AM 133**; Part 3: General Responses (81-APM-6) **AM 139**
Epstein, M. Effective Thermal Conductivity for Combined Radiation and Free Convection in an Optically Thick Heated Fluid Layer **HT 114**
Equilibrium Paths
On the Stability of Equilibrium Paths Associated With Autonomous Systems (81-APM-9) **AM 183**
Equivalent Linearization
Thermally Symmetric Nonlinear Heat Transfer in Solids **HT 745**
Erdogan, F. Ductile Fracture of Pipes and Cylindrical Containers With a Circumferential Flaw **PVT 160**; Viscoelastic Analysis of Adhesively Bonded Joints **AM 331**
Ergodicity Assumption
On the Error That Can Be Induced by an Ergodicity Assumption (BN) **AM 654**
Erickson, M.
Stress Distributions Around a Circular Hole in Square Plates, Loaded Uniformly in the Plane, on Two Opposite Sides of the Square (BN) **AM 203**
Ermer, D. S. Optimization of Multipass Turning With Constraints **I 462**
Ermi, A. M. Multispecimen Fatigue Crack Propagation Testing **MT 240**
Erosion
A New Approach for Erosion Prediction Due to Fly Ash (80-GT-96) **P 265**
Esophageal Accelerometers
Esophageal Accelerometer—Indicator of Cardiovascular Function **BE 160**
Esposito, A. *(author)* Fluid Power With Applications (BR) **F 484**
Etsion, I. Analysis and Design of a Uniform-Clearance, Pumping-Ring Rod Seal for the Stirling Engine **MD 67**; Analysis of a Hydrodynamic Thrust Bearing With Incomplete Film (80-C2/Lub-27) **L 355**; (D) **L 359, 360**; (AC) **L 360**; An Analysis of Mechanical Face Seal Vibrations (80-C2/Lub-8) **L 428**; (D) (AC) **L 434**; Cavitation in a Short Bearing With Pressurized Lubricant Supply (80-C2/Lub-47) **L 337**; (D) **L 346**; (AC) **L 347**; Dynamic Analysis of a Cantilever-Mounted Gas-Lubricated Thrust Bearing (80-C2/Lub-32) **L 157**; Dynamic Response to Rotating-Seat Runout in Noncontacting Face Seals **L 587**; Externally Pressurized Two Layer Film Bearing—Gas Bearing With Liquid Layer (80-C2/Lub-41) **L 573**; (D) (AC) **L 577**
Eutectoid Temperature
The Creep Rupture Properties of ASME SA 516 (Grade 55) Steel in the Range 426°C to 872°C **MT 253**
Evacuated Solar Collectors
Helium Penetration in Evacuated Solar Collectors: Theory and Effect on Their Performance (TB) **SE 175**
Evacuated Tube Cover
Theoretical and Experimental Study of an Air Solar Collector with an Evacuated Tube Cover **SE 251**
Evaluation of Tensile Failure of Girth Weld Repair Grooves in Pipe Subjected to Offshore Laying Stresses (80-Pet-74) **ERT 48**
Evans, H. P. Inverse Solution of Reynolds' Equation of Lubrication Under Point-Contact Elastohydrodynamic Conditions **L 539**; The Isothermal Elastohydrodynamic Lubrication of Spheres **L 547**; (D) (AC) **L 557**
Evans, J. W. An Extended Model for Determining Dynamic Loads in Spur Gearing (80-C2/DET-90) **MD 398**
Evans, R. D. Modelling of Hydraulically Fractured Gas Wells Completed in Noncontinuous Lenticular Formations **ERT 153**
Evaporating Flows
A Generalization of the System Mean Void Fraction Model for Transient Two-Phase Evaporating Flows **HT 81**
Evaporation
Droplet Evaporation in High Temperature Environments (79-WA/HT-6) **HT 86**
Evaporation of Small Water Drops Containing Salt in a High Pressure Steam Environment (76-WA/FE-35) **F 112**
A Numerical Solution to Dropwise Evaporation **HT 501**
Evaporative Cooling
Design and Testing of Thin Adiabatic Desiccant Beds for Solar Air Conditioning Applications **SE 89**
Evaporator Tubes
In Situ Biofouling of Ocean Thermal Energy Conversion (OTEC) Evaporator Tubes **SE 121**
Evaporators
A Detailed Transient Model of an OTEC Evaporator **P 539**
Evolution Equations
Dynamical Systems and Evolution Equations: Theory and Applications (BR) **AM 450**
Exact Solution
Transverse Vibrations of Beams, Exact Versus Approximate Solutions **AM 923**
Exergy
Second Law Analysis and Synthesis of Solar Collector Systems **SE 23**
Exhaust Gas
NO_x Removal Process by Injection of NH_3 and H_2O_2 in Gas Turbine Exhaust Gas **P 589**
Exhaust Pipes
On the Acoustical Implications of Vortex Shedding from an Exhaust Pipe (80-WA/NC-16) **I 378**
Existence Theorem
A Note on Avoidance Control **DS 69**
Exit Temperature
Pattern Factor Improvement in the F-100 Primary Combustion System (81-GT-25) **P 739**
Expanders
A Comparison Between Trochoidal, Rotary Vane and Reciprocating Expanders (80-C2/DET-61) **MD 304**
Explosive Forming
Near-Contact Explosive Forming **PVT 366**
Explosives
Dynamic Analysis of Explosive-Metal Interaction in Three Dimensions **AM 30**
Permeability Enhancement Using Explosive Techniques (80-Pet-70) **ERT 110**
Extended Surface
A General Extended Surface Analysis Method **HT 699**
Extensional Flows
Rheology (BR) **AM 450**
External Heating
Heat Transfer in Cooled Porous Region with Curved Boundary **HT 765**
External Load
Effect of the External Load on the Thermoelastoplastic Creep Deformation (BN) **AM 429**
Extreme Distant Lines
Determination of Extreme Distances of a Robot Hand: Part 2: Robot Arms With Special Geometry (80-DET-58) **MD 776**
Extreme Distances
Determination of Extreme Distances of a Robot Hand—Part 1: A General Theory (80-DET-57) **MD 631**
Eyre, F. W. International Technology Transfer—Who Should Learn the Second Language? (80-C2/DET-83) **MD 335**

F

Fabrication Industry
Fatigue of Welded Structures (BR) **MT 185**
Face Seals
An Analysis of Mechanical Face Seal Vibrations (80-C2/Lub-8) **L 428**; (D) (AC) **L 434**
Design and Performance of Compliant Thrust Bearings With Spiral-Groove Membranes on Resilient Supports (80-C2/Lub-36) **L 373**; (D) **L 385, 386**; (AC) **L 386**
Dynamic Response to Rotating-Seat Runout in Noncontacting Face Seals **L 587**
Hydrodynamic Lubrication in Wavy Contacting Face Seals—A Two Dimesional Model (80-C2/Lub-10) **L 578**; (D) (AC) **L 586**
Fagerlund, A. C. Sound Transmission Through a Cylindrical Pipe Wall (80-WA/NC-3) **I 355**
Failure
Asymptotic Distributions for the Failure of Fibrous Materials Under Series-Parallel Structure and Equal Load-Sharing **AM 75**
Failure Characteristics
Endurance and Failure Characteristics of Modified Vasco X-2, CBS 600 and AISI 9310 Spur Gears (80-C2/DET-58) **MD 506**; (D) **MD 514**; (AC) **MD 514, 515**
Failure Diagnosis
A Diagnosis Method for Linear Stochastic Systems With Parametric Failures **DS 28**
Failure States
Finite-Element Solution of Elastic-Plastic Boundary-Value Problems (81-APM-17) **AM 69**
Fan, D.-N. Heat Transfer from a Cone Spinning in a Corotating Fluid (TN) **HT 815**
Fan Flutter
The Effect of Aerodynamic Phase Lag in the Twin Vibration Mode Model of Aeroengine Fan Flutter (80-GT-166) **P 313**
Fanney, A. H. Simulation of Thermal Performance of Solar Collector Arrays (81-WA/Sol-1) **SE 258**
Fans
Averaging Methods for Determining the Performance of Large Fans from Field Measurements (80-JPGC/Pwr-1) **P 345**
Fan/Foundation Interaction—A Simplified Calculation Procedure **P 805**
Farney, G. R. Frequency Response of Blocked Annular Fluid Transmission Lines **DS 366**
Farouk, B. Natural Convection from a Horizontal Cylinder—Laminar Regime **HT 522**
Farouq Ali, S. M. State-of-the-Art of Thermal

Recovery Models **ERT 296**

Fast Fracture
Arrest of Mode III Fast Fracture by a Transition From Elastic to Viscoplastic Material Properties **AM 509**

Fast Reactors
Structural Confinement and Safety Design of a Fast Reactor Core (80-C2/DET-112) **MD 289**

Fastener Holes
Stress Intensity Factors for Corner Cracked Holes Under General Loading Conditions **MT 171**

Fatigue
An Analysis of Grain Size and Yield Stress Effects on Stress at Fatigue Limit and Threshold Stress Intensity Factor **MT 229**
Analysis Method for Both Internal Stresses and Microstructural Effect Under Pure Rolling Fatigue Conditions **L 521**
Bending Fatigue Tests of High Speed Spur Gears (80-C2/DET-87) **MD 466**
Constrained Fatigue Life Optimization of a Nasvytis Multiroller Traction Drive (80-C2/DET-78) **MD 423**; (D) **MD 428**; (AC) **MD 429**
A Criterion for Low-Cycle Fatigue Failure Under Biaxial States of Stress **MT 1**
Development of a Procedure for Estimating the High Cycle Fatigue Strength of Some High Temperature Structural Alloys **MT 97**
An Explanation for the Effects of Hold Periods on the Elevated Temperature Fatigue Behavior of 2 1/4 Cr-1 Mo Steel **MT 7**
Failure of Thin Film Lubrication—Thin Effect of Running-In on the Load Carrying Capacity of Thin-Film Lubricated Concentrated Contacts (80-C2/Lub-42) **L 203**; (D) (AC) **L 209**
Fatigue Criteria Under Combined Stresses or Strains **MT 82**
Fatigue Life Predictions of Smooth and Notched Specimens Based on Fracture Mechanics **MT 91**
The Fatigue and Toughness Properties of a C-Mn-Cb Plate Steel (Er) **MT 263**
Fatigue of Welded Structures (BR) **MT 185**
Hydrodynamic Aspects of Fatigue in Plain Journal Bearings (80-C2/Lub-19) **L 150**
Long-Life Fatigue Test Results for Two Nickel-Base Structural Alloys **MT 126**
Low Cycle Fatigue of Commercial Piping Steels in a BWR Primary Water Environment **MT 15**
Metal Fatigue in Engineering (1980) (BR) **MT 348**
Methods of Predicting Material Life in Fatigue (Ed) **MT 81**
Multispecimen Fatigue Crack Propagation Testing **MT 240**
A New Approach to the Evaluation of Fatigue Under Multiaxial Loadings **MT 118**
A New Parameter for Characterizing Corrosion Fatigue Crack Growth **MT 298**
A Reinterpretation of the Palmgren-Miner Rule for Fatigue Life Prediction (D) **AM 448**; (AC) **AM 448**
Simplified Fatigue Life Analysis for Traction Drive Contacts (80-C2/DET-40) **MD 430**; (D) **MD 438**; (AC) **MD 439**
Small Crack Behavior and the Prediction of Fatigue Life **MT 26**
A Statistical Simulation Model of Miner's Rule **MT 112**
Threshold and Low-Rate Fatigue Crack Growth of a NiMoV Rotor Steel **MT 104**

Fatigue Crack-Growth
Corrosion Fatigue Crack-Growth Behavior of HY-130 Steel and Weldments **PVT 314**
A Design Approach for Correlating High Temperature Fatigue Crack Growth Over a Wide Range of Parameters **MT 246**
The Effect of Product Form Upon Fatigue-Crack Growth Behavior in Alloy 718 (81-Mat-1) **MT 234**
Fatigue Crack Growth Behavior of Explosively-Bonded Clad Steel Plates **MT 36**

Fatigue Cracking
Advances in Labyrinth Seal Aeroelastic Instability Prediction and Prevention (80-GT-151) **P 308**

Fatigue Cracks
A Damage Accumulation Model for Fatigue Crack Propagation **MT 293**
A Dislocation Model for Fatigue Crack Initiation (81-APM-3) **AM 97**
Gas Turbine Engine Disk Retirement-for-Cause: An Application of Fracture Mechanics and NDE (80-GT-127) **P 198**

Fatigue Damage
Fatigue Damage of the Locomotive Suspension Elements Under Random Loading (80-WA/DE-7) **MD 871**

Fatigue Failure
Fatigue Failure Criteria for Unidirectional Fiber Composites **AM 846**

Fatigue Life
Design of Aluminum Bicycle Frames **MD 901**
Measuring the Actual Endurance Limit of One Specimen Using a Nondestructive Method **MT 71**
Rolling Bearing Life Modifying Factors for Film Thickness, Surface Roughness, and Friction (80-C2/Lub-16) **L 509**; (D) **L 516-518**; (AC) **L 519**

Fatigue Strength
Factors Affecting Fatigue Strength of Nylon Gears (80-C2/DET-104) **MD 543**

Favre-Marinet, M. Generation of Oscillating Jets **F 609**

Fawcett, J. N. The Role of Elastic Tangential Compliance in Oblique Impact (80-C2/Lub-22) **L 74**

Feedback Control
Nonlinear State Estimation and Feedback Control of Nonlinear and Bilinear Distributed Parameter Systems **DS 78**
On the Efficacy of Nonlinear Control in Uncertain Linear Systems **DS 95**

Feedback Model
Modeling of Nonholonomic Dynamic Systems With Applications (81-APM-12) **AM 177**

Feeders
Study on Vibratory Feeders: Calculation of Natural Frequency of Bowl-Type Vibratory Feeders **MD 249**

Felippa, C. A. Nonlinear Static Analysis of Deep Ocean Mining Pipe—Part I: Modeling and Formulation (80-Pet-48) **ERT II**; Part II; Numerical Studies (80-Pet-49) **ERT 16**

Felmley, C. R., Jr. Pressure Vessel Reaearch Committee **PVT 388**

Felske, J. D. Nongray Particulate Radiation in an Isothermal Cylindrical Medium **HT 121**

Fenner, W. J. Large Plane-to-Surface Deformation of Membranes With Inclusion **AM 357**

Ferguson, R. J. Kinematic Efficiency of Non-Circular Geared Transmissions **MD 170**

Fernandez de la Mora, J. An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) **P 552**; (D) **P 558, 559**; (AC) **P 560**

Ferrer, J. State-of-the-Art of Thermal Recovery Models **ERT 296**

Ferziger, J. H. A Prediction Method for Planar Diffuser Flows (81-FE-5) **F 315**

Fiber Composites
Fatigue Failure Criteria for Unidirectional Fiber Composites **AM 846**

Fiber-End Cracks
On Stiffness and Strength of an Aligned Short-Fiber Reinforced Composite Containing Fiber-End Cracks Under Uniaxial Applied Stress **AM 361**

Fibers
Analysis and Performance of Fiber Composites (BR) **AM 213**

Fibrous Materials
Asymptotic Distributions for the Failure of Fibrous Materials Under Series-Parallel Structure and Equal Load-Sharing **AM 75**

Fichter, E. F. Equations for Four-Bar Line-Envelopes (80-DET-40) **MD 743**; (D) (AC) **MD 749**

Field, G. J. Elastohydrodynamic Lubrication of Offset O-Ring Rotary Seal (80-C2/Lub-7) **L 414**; (D) **L 424, 425, 426**; (AC) **L 427**

Field Measurements
Averaging Methods for Determining the Performance of Large Fans from Field Measurements (80-JPGC/Pwr-1) **P 345**

Figari, A. Lubrication of a Melting Slider Under Nonisothermal Conditions **L 436**

Figliola, R. S. On the Hemolytic and Thrombogenic Potential of Occluder Prosthetic Heart Valves From In-Vitro Measurements **BE 83**

Film Bearings
Externally Pressurized Two Layer Film Bearing—Gas Bearing With Liquid Layer (80-C2/Lub-41) **L 573**; (D) (AC) **L 577**

Film Boiling
Destabilization of Film Boiling Due to Arrival of a Pressure Shock: Part I Experimental **HT 459**; Part II: Analytical **HT 465**

Film Failure
Failure of Thin Film Lubrication—An Expedient for the Characterization of Lubricants (80-C2/Lub-43) **L 497**; (D) **L 501**; (AC) **L 502**

Film Formation
Antiwear Mechanism of ZDDP in the Presence of Calcium Sulfonate Detergent **L 486**; (D) **L 494, 495**; (AC) **L 495**

Film Stability
Analysis of a Hydrodynamic Thrust Bearing With Incomplete Film (80-C2/Lub-27) **L 355**; (D) **L 359, 360**; (AC) **L 360**

Film Temperatures
A Comparison of Film Temperatures and Oil Discharge Temperature for a Tilting-Pad Journal Bearing (80-C2/Lub-37) **L 115**

Film Thickness
Analysis of a Hydrodynamic Thrust Bearing With Incomplete Film (80-C2/Lub-27) **L 355**; (D) **L 359, 360**; (AC) **L 360**
Elastohydrodynamic Lubrication of Hypoid Gears (80-C2/DET-47) **MD 195**
An Experimental Evaluation of the Hamrock and Dowson Minimum Film Thickness Equation for Fully Flooded EHD Point Contacts (80-C2/Lub-38) **L 284**; (D) **L 294**
A Film Thickness Analysis for Line Contacts Under Pure Rolling Conditions With a Non-Newtonian Rheological Model (80-C2/Lub-26) **L 305**; (D) **L 313**; (AC) **L 314**
A Numerical Solution to the Dynamic Load, Film Thickness, and Surface Temperatures in Spur Gears, Part I Analysis **MD 177**; Part II Results **MD 188**
Rolling Bearing Life Modifying Factors for Film Thickness, Surface Roughness, and Friction (80-C2/Lub-16) **L 509**; (D) **L 516-518**; (AC) **L 519**
Some Limitations in Applying Classical EHD Film Thickness Formulas to a High-Speed Bearing (80-C2/Lub-13) **L 295**; (D) **L 301**; (AC) **L 303**

Filtering Processes
Discrete-Time Equivalent of Continuous-Time Filtering Processes **DS 417**

Filters
A Diagnosis Method for Linear Stochastic Systems With Parameter Failures **DS 28**
A Discrete-Time Adaptive Filter for Stochastic Distributed Parameter Systems **DS 266**

Filtration
A Model of Lubrication Filtration (80-C2/Lub-20) **L 81**

Fin Tips
Analytically Determined Fin-Tip Heat Transfer Coefficients **HT 18**

Final Stretch
The Equivalence of the Final Stretch and Crack Tip Opening Angle Criteria for Plane Strain Crack Growth **MT 148**

Final Stretch Concept
Stable Phase of Ductile Fracture in Two and Three Dimensions, Final Stretch Model (81-WA/APM-5) **AM 500**

Findley, W. N. Creep of 2618 Aluminum Under Side-Steps of Tension and Torsion and Stress Reversal Predicted by a Viscous-Viscoelastic Model (81-APM-8) **AM 47**; Creep and Creep Recovery of 304 Stainless Steel at Low Stresses With Effects of Aging on Creep and Plastic Strains (81-WA/APM-17) **AM 785**

Finite Bearing Theory
On the Steady State and Dynamic Performance Characteristics of Floating Ring Bearings (80-C2/Lub-17) **L 389**; (D) (AC) **L 397**

Finite Bodies
Viscoelastic Responses of Finite Bodies by Quadrature Form of Correspondence Principle (BN) **AM 206**

Finite Cracks
Transient Response of a Finite Crack in a Half Plane Under Impact Load **AM 534**

Transient Response of a Finite Crack in a Strip With Stress-Free Edges (D) **AM 681**; (AC) **AM 682**

Finite Disk
Rotating Compressible Flow Over the Edge of a Finite Disk (81-APM-19) **AM 249**

Finite Element Calculations
Application of Finite Element Calculations to Residual Stress Measurements **MT 157**

Finite Element Codes
Structural Mechanics Software Series—Vol. II (BR) **MD 558**

Finite Element-Transfer Matrix Approach
An Exact Condensation Procedure for Chain-Like Structures Using a Finite Element-Transfer Matrix Approach (80-C2/DET-123) **MD 295**

Finite Elements
Elementary Finite Element Method (BR) **MD 685**

Finite-Segment Technique
Determination of Balloon Surface in Textile Machines—A Finite Segment Approach **I 424**

Finite Thickness
Nonlinear Theory for Flexural Motions of Thin Elastic Plate—Part I: Higher-Order Theory **AM 377**; Part II: Boundary-Layer Theory Near the Edge **AM 383**

Finite Torsion
On a One-Dimensional Theory of Finite Torsion and Flexure of Anisotropic Elastic Plates **AM 601**

Finkin, E. F. Application of Abrasive Coatings to Clearance Control in the Gas Turbine (D) **P 602**; (AC) **P 603**

Finned Channels
Analytic Prediction of the Friction Factor for Turbulent Flow in Internally Finned Channels **HT 423**

Finned Tubes
Prediction of Heat Transfer Coefficients in Gas Flow Normal to Finned and Smooth Tube Banks **HT 705**

Finnie, I. On the Physical Basis of Auerbach's Law (TB) **MT 183**; A Review of the Recent Literature on the Unlubricated Sliding Wear of Dissimilar Metals (81-WA/Mat-2) **MT 333**

Fins
Combined Free and Forced Convection in Vertical Tubes with Radial Internal Fins **HT 566**
The Effects of Nonuniform Heat Transfer from an Annular Fin of Triangular Profile (TN) **HT 184**
A General Extended Surface Analysis Method **HT 699**
Heat Transfer and Interface Motion During Melting and Solidification around a Finned Heat Source/Sink (80-HT-10) **HT 720**
Laminar Mixed Convection in a Shrouded Fin Array **HT 559**
Measured Heat Transfer Coefficients at and Adjacent to the Tip of a Wall-Attached Cylinder in Crossflow-Application to Fins **HT 778**
Optimized Performance of Condensers with Outside Condensing Surfaces **HT 96**
Optimum Cylindrical Pin Fin (TN) **HT 814**

Firoozbakhsh, K. An Analytical Model of Pauwels' Functional Adaptation Mechanism in Bone **BE 246**

First Principles
A First Principles Model for Steam Turbine Control Anlaysis **DS 61**

Fischer, F. J. Dynamic Response of a Cantilever Pile to Vortex Shedding in Regular Waves **ERT 32**

Fixation Agents
The Retained Elasticity of Elastin Under Fixation Agents (TB) **BE 121**

Fixation Post
Analysis of Model Variables and Fixation Post Length Effects on Stresses Around a Prosthesis in the Proximal Tibia **BE 239**

Fixed-Ratio Traction Drive
Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) **MD 410**; (D) **MD 417**; (AC) **MD 420**

Flack, R. D. Influence of Acceleration on the Critical Speed of a Jeffcott Rotor (80-GT-88) **P 108**

Flamand, L. On the Traction Behavior of Several Lubricants (80-C2/Lub-15) **L 55**; Rheological and Thermal Effects in Lubricated E.H.D. Contacts **L 526**; Simulation of Hertzian Contacts Found in Spur Gears with a High Performance Disk Machine **MD 204**

Flame Stability
The Influence of Premixed Combustion Flame Stabilizer Geometry on Flame Stability and Emissions (81-GT-26) **P 749**

Flame Stabilizer
A Comparison of Cold and Reacting Flows Around a Bluff-Body Flame Stabilizer **F 328**

Flange Contact
Influence of Wheel/Rail Contact Geometry on Large Amplitude Wheelset Equations of Motion **DS 211**

Flanged Joint Research
Pressure Vessel Research Committee **PVT 388**

Flanges
Background of New Code Rules For Integral Flat Heads with a Large, Central Nozzle **PVT 116**

Flapping
The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-13) **F 119**; (D) (AC) **F 126**

Flat Cars
Ride Quality Analysis of Multi-Level Auto Rack Equipped Flat Cars (79-WA/RT-4) **I 241**

Flat Heads
Background of New Code Rules For Integral Flat Heads with a Large, Central Nozzle **PVT 116**

Flat-Plate Collectors
Analytical Predictions of Liquid and Air Photovoltaic/Thermal, Flat-Plate Collector Performance **SE 291**
Solar Energy (BR) **SE 75**
U.S. Contour Maps of Annual Energy Delivery by Flat Plate Collectors (TB) **SE 360**

Flat Plate Solar Collectors
Design Optimization of Sinusoidal Glass Honeycomb for Flat Plate Solar Collectors **SE 268**
Optimal Control of Mass Flow Rates in Flat Plate Solar Collectors **SE 113**
The Role of Rear Insulation in the Performance of Flat Plate Solar Collectors **SE 282**
Temperature Variation in the Absorber Plate of an Air Heating Flat Plate Solar Collector (80-WA/Sol-2) **SE 153**
Theoretical and Experimental Study of an Air Solar Collector with an Evacuated Tube Cover **SE 251**
Uncertainty in Determining Thermal Performance of Liquid-Heating Flat-Plate Solar Collectors **SE 126**

Flat Plates
Line Contact Deformation: A Cylinder Between Two Flat Plates (80-C2/Lub-50) **L 21**
Wake Behavior in the Presence of Free Stream Turbulence **P 490**

Flat Punch
Heat Conduction Through a Flat Punch **AM 871**

Flat Surfaces
Mechanics of Ice-Lifting From a Flat Surface Through Penetration With a Sharp Blade (81-WA/APM-27) **AM 936**

Fleeter, S. Wake Induced Time-Variant Aerodynamcis Including Rotor-Stator Axial Spacing Effects **F 59**

Flexibility
Locally and Nonlocally Reacting Flexible Porous Layers; A Comparison of Acoustical Properties (80-WA/NC-14) **I 302**
A Perturbation Analysis of Fluid-Structure Interactions in a Model Test System **AM 7**

Flexible Couplings
Friction Between High Speed Gear Coupling Teeth **MD 54**; (D) **MD 58**; (AC) **MD 59**

Flexible Links
The Application of Finite Element Methods to the Dynamic Analysis of Flexible Spatial and Co-Planar Linkage Systems (80-DET-87) **MD 643**
On Predicting Vibrations in Realistically Proportioned Linkage Mechanisms (80-DET-4) **MD 706**
Demonstration of a Unified Approach to the Balancing of Flexible Rotors (80-GT-87) **P 101**
The Vibration Isolating Properties of Uncentralized Squeeze-Film Damper Bearings Supporting a Flexible Rotor **P 781**

Flexible Structures
Optimum Pulse Control of Flexible Structures **AM 819**

Flexible Support
An Anlaysis of Mechanical Face Seal Vibrations (80-C2/Lub-8) **L 428**; (D) (AC) **L 434**
Experiments on the Vibration Characteristics of a Rotor With Flexible, Damped Support (80-GT-124) **P 174**

Flexural Motions
Nonlinear Theory for Flexural Motions of Thin Elastic Plate—Part 1: Higher-Order Theory **AM 377**; Part 2: Boundary-Layer Theory Near the Edge **AM 383**

Flexure
On a One-Dimensional Theory of Finite Torsion and Flexure of Anisotropic Elastic Plates **AM 601**

Floating Ice Structures
Experimental Study on Moving Loads on a Floating Sea Ice Road **ERT 98**

Floating Ring Bearings
On the Steady State and Dynamic Performance Characteristics of Floating Ring Bearings (80-C2/Lub-17) **L 389**; (D) (AC) **L 397**

Flood Protection
Flood Protection By Vortex Valves **DS 338**

Floguet, A. Contact Temperature in Dry Bearings. Three Dimensional Theory and Verification (80-C2/Lub-40) **L 243**; (D) (AC) **L 252**

Flores, A. Analysis of the Horizontal to Vertical Orientation of Deep Water Risers (80-Pet-67) (TB) **ERT 106**

Flow
The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-13) **F 119**; (D) (AC) **F 126**
Application of the Method of Integral Relations to the Calculation of Two-Dimensional Incompressible Turbulent Boundary Layer **AM 701**
Calculations of Three-Dimensional Viscous Flow and Wake Development in a Centrifugal Impeller **P 367**
Cavitation Inception Tests on Axisymmetric Headforms **F 268**
Complex Turbulent Flows: Comparison of Computation and Experiment **F 184**
Computation of the Turbulent Flow in an Internal Combustion Engine During Compression **F 75**
Conventional Probes for the Relative Flow Measurement in a Turbomachinery Rotor Blade Passage **P 406**
Development of Affinity Relations for Modeling Characteristics of Check Valves (80- Pet-36) **ERT 196**
Direct Approach to Aerodynamic Design Problems **AM 721**
The Effect of the Axial Velocity Density Ratio on the Aerodynamic Coefficients of Compressor Cascades (80-GT-134) **P 210**
The Effect of Bevel Angle on Safety Valve Vent-Pipe Systems **P 587**
The Effect of Crossflow at the Entrance on Heat Transfer Enhancement in Tubes (TN) **HT 178**
The Effect of Inertia on Flow Between Misaligned Rotating Disks (80-WA/FE-2) **F 82**
Effects of Free-Stream Turbulence on Diffuser Performance (81-FE-4) **F 385**
Effects of Free-Stream Turbulence Intensity and Frequency on Heat Transfer to Turbine Blading (80-GT-79) **P 60**
Experimental Analysis Methods for Unsteady Flows in Turbomachines **P 415**
Experimental Measurements of the Flow-Induced Shear Stress Distribution in the Vicinity of Prosthetic Heart Valves **BE 267**
Experimental Study of Two-Phase Normal Slug Flow in a Pipeline-Riser Pipe System (80-Pet-35) **ERT 67**
Flow Field Analysis and Performance of Wind Turbines Employing Slotted Diffusers **SE 17**
Flow Instability at the Inlet of a Centrifugal Compressor **P 451**
The Flow of a Non-Newtonian Fluid Past Projections and Depressions (D) **AM 448**
Fluid Flow Through a Class of Highly-Deformable Porous Media Part I: Experiments with Air **F 432**; (D) **F 438**; (AC) **F 439**; Part II: Experiments with Water **F 440**
Fluid-Inertia Effects in Radial Flow Between Oscillating, Rotating Parallel Disks (80-C2/Lub-48) **L 144**
A Generalization of the System Mean Void Fraction Model For Transient Two-Phase Evaporating Flows **HT 81**

Heat Transfer in a Capillary Flow Emerging from a Reservoir HT 429
Heat Transfer from a Plate Elevated above a Host Surface and Washed by a Separated Flow Induced by the Elevation Step HT 441
Historical Review of Real-Fluid Isentropic Flow Models (79-WA/FM-1) F 258
The Hybrid Diffuser (80-GT-136) P 229
Inception of Cavitation From a Backward Facing Step F 288
Influence of Mach Number and End Wall Cooling on Secondary Flows in a Straight Nozzle Cascade (80-GT-52) P 257; (D) P 263; (AC) P 264
The Influence of Swirl on the Flow Characteristics of a Reciprocating Piston-Cylinder Assembly (D) (AC) F 180, 181
An Investigation Into the Performance of Two Inlet Nozzles for Flow-Measurement F 67; (D) (AC) F 73
Investigations of an Axial Compressor End-Wall Boundary Layer Prediction Method (80-GT-53) P 20
Laser Anemometer Measurements in a Transonic Axial Flow Compressor Rotor P 430
Linear Spatial Stability of Developing Flow in a Parallel Plate Channel (BN) AM 192
LMFBR Loss of Flow Simulations in the Sodium Loop Safety Facility P 605
The Lung—A Perspective of Biomechanics Development BE 91
Mathematical Formulation of Cooling Water Flow Rates for High Speed Continuous Slab Caster (80-C2/DET-111) MD 318
Mean Flow Measurements Near the Plane of an Open Rotor Operating with an Inlet Velocity Gradient P 445
Measurement of Turbine Rotor Blade Flows P 400
Measurements of the Mean Flow Velocity and Velocity Fluctuations at the Exit of an FC Centrifugal Fan Rotor P 393
Microconvective Thermal Conductivity in Disperse Two-Phase Mixtures as Observed in a Low Velocity Couette Flow Experiment HT 47
Natural Convection in Horizontal Duct Connecting Two Fluid Reservoirs HT 108
Nonaxisymmetric Blade Row Interaction in Axial Turbomachines (80-GT-133) P 201
Numerical and Experimental Simulations of Pseudoplastic Transient Pipe Flows AM 1
A Numerical Model for the Flow Within the Tower of a Tornado-Type Wind Energy System SE 299
Once-Through Cooling Potential of the Middle and Lower Mississippi River During Low Flow Conditions P 594
The Plane Parallel Flow of a Binary Mixture of Fluids AM 707
Prediction and Measurement of Mass, Heat, and Momentum Transport in a Nonreacting Turbulent Flow of a Jet in an Opposing Stream F 127
A Prediction Method for Planar Diffuser Flows (81-FE-5) F 315
Pressure and Vortex Shedding Patterns Around a Low Aspect Ratio Cylinder in a Sheared Flow at Transitional Reynolds Numbers F 88; (D) F 95; (AC) F 96
REVIEW—A Review of Some Phenomena in Turbulent Flow Separation F 520
REVIEW: Turbulent Developing Pipe Flow F 243
Rotating Compressible Flow Over the Edge of a Finite Disk (81-APM-19) AM 249
A Round Jet Normal to a Crossflow (80-WA/FE-18) F 142
On the Stokes Flow of Viscous Fluids Through Corrugated Pipes (Er) AM 454
A Study on Centrifugal Impeller and Diffuser Flow (81-GT-9) P 688
A Study of Some Turbulence Models for Flow and Heat Transfer in Ducts of Annular Cross-Section HT 146
A Study of the Viscous and Nonadiabatic Flow in Radial Turbines P 481
A Surface Integral Numerical Solution for Laminar Developed Duct Flow AM 695
The Third Two-Dimensional Problem of Three-Dimensional Blade Systems of Hydraulic Machines—Part 1: Theoretical Analysis F 33; Part 2: Analytical Results F 42
On the Thrust Bearing Characteristics in Turbulent Flow L 453
On the Transient Convective Transport from a Body of Arbitrary Shape HT 92
Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (80-WA/FE-9) F 97; (D) (AC) F 372
Turbulent Shear Flows Over a Step Change in Surface Roughness F 344
Universal Similarity in the Wakes of Stationary and Vibrating Bluff Structures (80-WA/FE-4) F 52

Flow Behavior
Rheology (BR) AM 450

Flow Lines
On One Analysis of Piercing by the Use of Flow Lines (TB) I 233

Flow Mapping
Efficient Laser Anemometer for Intra-Rotor Flow Mapping in Turbomachinery P 424

Flow Passages
Optimization of Flow Passage Geometry for Air-Heating Plate-Type Solar Collectors SE 323

Flow Phenomena
A Computational Method for Free Surface Hydrodynamics PVT 136

Flow Problems
A Modified Form of the k-ε Model for Predicting Wall Turbulence F 456

Flow Rates
Design and Evaluation of Evaporating Lens Direct Contact Heat Exchangers ERT 128
An Investigation Into the Performance of Two Inlet Nozzles for Flow Measurement F 67; (D) (AC) F 73
Optimal Control of Mass Flow Rates in Flat Plate Solar Collectors SE 113

Flow Strength
Age Softening Characteristics of Annealed 2-1/4 Cr-1 Mo Steel in the Temperature Range 424 to 704°C MT 62

Flow Stresses
Flow Stresses of Prestrained Annealed OFHC Copper and SAE 1018 Steel MT 188
The Role of Microcracks in Large Plastic Deformation I 431

Flow Structure
Flow Structure with Natural Convection in Inclined Air-Filled Enclosures HT 535
Tilting, Stretching, Pairing and Collapse of Vortex Structures in Confined Counter-Current Flow (80-WA/FE-11) F 466

Flow Surfaces
A Theory of Multiaxial Anisotropic Viscoplasticity (81-APM-21) AM 276

Flow Velocity
Dynamic Behavior of Continuous Cantilevered Pipes Conveying Fluid Near Critical Velocities (81-WA/APM-13) AM 943
Flow Velocity Dependence of Damping in Tube Arrays Subjected to Liquid Cross-Flow PVT 130
On Some Aspects of Surface Formation in ECM I 341

Flow Visualization
Flow Visualization in a Mold of an Atherosclerotic Human Abdominal Aorta BE 168

Fluctuating Flow
Drag on a Droplet in Translating Fluctuating Flow (BN) AM 436

Flueckiger, G. Flow Instability at the Inlet of a Centrifugal Compressor P 451

Fluid Amplifiers
A Fluidic, Hydraulic Servovalve DS 331

Fluid Bed Heat Transfer
Extension of the Adams-Welty Fluid Bed Heat Transfer Model to the Packed Bed Case (TN) HT 602

Fluid Control Systems
Frequency Response Analysis of Fluid Control Systems for Parabolic Trough Solar Collectors SE 339

Fluid Dynamic Forces
Reexamination of Unsteady Fluid Dynamic Forces on a Two-Dimensional Finite Plate at Small Mach Numbers (D) (AC) AM 962

Fluid Dynamics
Computational Fluid Dynamics (BR) F 367; Computational Fluid Dynamics, Vol. 2 (BR) F 367
Geophysical Fluid Dynamics (BR) AM 684

Fluid Film
Temperature Gradients Through EHD Films and Molecular Alignment Evidenced By Infrared Spectroscopy (80-C2/Lub-12) L 65

Fluid Film Bearings
Some Experiments on the Steady State Characteristics of a Cylindrical Fluid-Film Bearing Considering Thermal Effects (80-C2/Lub-34) L 107

Fluid-Film Journal Bearings
Fluid-Film Journal Bearings Operating in a Hybrid Mode: Part I—Theoretical Analysis and Design L 558; Part II—Experimental Investigation L 566

Fluid Flow
A Computational Method for Free Surface Hydrodynamics PVT 136
Fluid Flow Through a Class of Highly-Deformable Porous Media Part I: Experiments With Air F 432; (D) F 438; (AC) F 439; Part II: Experiments With Water F 440
A Four Hole Pressure Probe for Fluid Flow Measurements in Three Dimensions F 590
Transient Fluid Flow in Porous Media: Inertia-Dominated to Viscous-Dominated Transition F 339
Viscous Effects in the Inception of Cavitation F 280

Fluid Flow Rate
Analytical Dynamic Modeling of Line-Focus Solar Collectors SE 244

Fluid-Inertia Effects
Fluid-Inertia Effects in Radial Flow Between Oscillating, Rotating Parallel Disks (80-C2/Lub-48) L 144

Fluid Machinery
Turbomachines—A Guide to Design Selection and Theory (BR) F 644

Fluid Mechanical Systems
A Numerical Solution for Gas-Particle Flows at High Reynolds Numbers (81-WA/APM-10) AM 465

Fluid Mechanics
Pioneering Contributions to Our Knowledge of Convective Heat Transfer (80-HT-137) HT 409
Review—Basic Research Needs in Fluid Mechanics F 509

Fluid Motions
Droplet Dynamics in Creeping Flows (81-APM-29) AM 224

Fluid Oscillations
Pendulum Analogy for Nonlinear Fluid Oscillations in Spherical Containers AM 769

Fluid Power
Fluid Power With Applications (BR) F 484

Fluid Power Systems
Finite Element Analysis of Hydraulic Cylinders (80-DE-3) MD 239

Fluid Stream
Perturbation Solutions of Transient Heat Transfer to a Porous Medium from a Fluid Stream (79-WA/HT-44) HT 159

Fluid-Structure Interaction
A Finite Element Formulation for Fluid-Structure Interaction in Three-Dimensional Space PVT 183
A Perturbation Anaylsis of Fluid-Structure Interactions in a Model Test System AM 7
A Structural Priority Approach to Fluid-Structure Interaction Problems PVT 142
Transient Cavitation in Fluid-Structure Interactions (80-C2/PVP-23) PVT 345

Fluid Transients
Pulse Propagation in Fluid-Filled Elastic Curved Tubes PVT 43

Fluidic Capillary Pyrometers
Fabrication, Testing, and Evaluation of Prototype Fluidic Capillary Pyrometer Systems DS 308

Fluidic Systems
Developments in Power Fluidics for Application in Nuclear Plant DS 342

Fluidics
Entering the Third Decade of Fluidics—an Academic Perspective (F) DS 301
Fluidics in Aircraft Engine Controls DS 324
A Perspective on the Past, Present, and Future of Fluidics (F) DS 301
Reflections on the Past Twenty Years in Fluidics (F) DS 299
Two Decades of Fluidics (F) DS 299

Fluids
Closed-Cycle Gas Turbine Working Fluids (80-GT-135) **P 220**
Infiltration of a Fluid Into a Dry Poro-Elastic Body **AM 259**
Natural Convective Boundary-Layer on Two-Dimensional and Axisymmetric Surfaces in High-Pr Fluids or in Fluid-Saturated Porous Media **HT 803**
The Plane Parallel Flow of a Binary Mixture of Fluids **AM 707**
Uncoupling Approximations in Fluid-Structure Interaction Problems With Cavitation **AM 753**
Fluids Engineering
Aerodynamic Effects of Shape, Camber, Pitch, and Ground Proximity on Idealized Ground-Vehicle Bodies **F 631**; (D) **F 637, 638**; (AC) **F 638**
The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-13) **F 119**; (D) (AC) **F 126**
Application of Laser-Doppler Anemometry to Fluid Mechanics, International Symposium, preview **F 460**
Calculation of Annular and Twin Parallel Jets Using Various Discretization Schemes and Turbulence-Model Variations **F 352**
Cavitation Inception Observations on Six Axisymmetric Headforms **F 273**; (D) (AC) **F 279**
Cavitation Inception in Spool Valves **F 564**; (D) **F 575**; (AC) **F 576**
Cavitation Inception Tests on Axisymmetric Headforms **F 268**
A Comparison of Cold and Reacting Flows Around a Bluff-Body Flame Stabilizer **F 328**
A Comparison of Two Optical Techniques for Measuring Cavitation Nuclei **F 8**
Complex Turbulent Flows: Comparison of Computation and Experiment **F 184**
Computation of the Turbulent Flow in an Internal Combustion Engine During Compression **F 75**
Computational Fluid Dynamics (BR) **F 367**; Computational Fluid Dynamics, Vol. 2 (BR) **F 367**
Correlations of Thermodynamic Effects for Developed Cavitation **F 534**
Developing Region of Laminar Jets With Parabolic Exit Velocity Profiles (81-FE-3) **F 322**
Drag Calculations for Vehicles in Very Long Tubes From Turbulent Flow Theory **F 361**
Drag Reducing Polymer in Helicoidal Flow **F 491**
The Effect of Cross-Winds on Trains **F 170**
The Effect of Froude Number on Entrainment in Two-Dimensional Line Plumes (81-FE-6) **F 471**
The Effect of Gravity on Certain Curved Channel Potential Flows (81-FE-19) **F 639**
The Effect of Inertia on Flow Between Misaligned Rotating Disks (80-WA/FE-2) **F 82**
The Effect of Nuclei on the Inception of Bubble and Sheet Cavitation on Axisymmetric Bodies **F 557**
The Effect of Secondary Vorticity on the Inception of Vortex Cavitation **F 19**
Effect of Wind-Tunnel Walls on the Drag of a Sphere **F 461**
Effects of Free-Stream Turbulence on Diffuser Performance (81-FE-4) **F 385**
On the Equilibrium of Cavitation Nuclei in Liquid-Gas Solutions **F 425**; (D) (AC) **F 430**
Evaluation of Vehicle Drag Parameters From Coast-down Experiments Conducted Under Nonideal Environmental Conditions **F 133**; (D) **F 140**; (AC) **F 141**
Evaporation of Small Water Drops Containing Salt in a High Pressure Steam Environment (76-WA/FE-35) **F 112**
Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) **F 391**; (D) (AC) **F 395**
Fluid Flow Through a Class of Highly-Deformable Porous Media Part I: Experiments With Air **F 432**; (D) **F 438**; (AC) **F 439**; Part II: Experiments With Water **F 440**
Fluid, Plasma, Thermophysics and Heat Transfer Conference, preview **F 375**
Fluid Power With Applications (BR) **F 484**
Forces on Staggered Airfoil Cascades in Unsteady In-Phase Motion **F 299**
A Four Hole Pressure Probe for Fluid Flow Measurement in Three Dimensions **F 590**
Fundamentals of Gas-Particle Flow (BR) **F 644**
Generation of Oscillating Jets **F 609**
Historical Review of Real-Fluid Isentropic Flow Models (79-WA/FM-1) **F 258**
Inception of Cavitation From a Backward Facing Step **F 288**
The Influence of Swirl on the Flow Characteristics of a Reciprocating Piston-Cylinder Assembly (D) (AC) **F 180, 181**
Initial Region of Subsonic Coaxial Jets of High Mean-Velocity Ratio **F 335**
The Initiation of Gaseous Microbubble Growth In Laminar Separation Bubbles **F 543**; (D) (AC) **F 549**
Instantaneous Pressure Distribution Around a Sphere in Unsteady Flow **F 497**
An Investigation Into the Performance of Two Inlet Nozzles for Flow Measurement **F 67**; (D) (AC) **F 73**
The Linear Instability Due to the Compressible Crossflow on a Swept Wing (D) (AC) **F 179**
Liquid Sheet Jet Experiments: Comparison With Linear Theory **F 595**; (D) **F 603**; (AC) **F 604**
Low-Reynolds-Number Turbulent Boundary Layers **F 624**
A Method for the Calculation of 3D Boundary Layers on Practical Wing Configurations **F 104**
A Modified Form of the k-ε Model for Predicting Wall Turbulence **F 456**
A New Probe for Measurement of Velocity and Wall Shear Stress in Unsteady, Reversing Flow **F 478**
A Note on the Effect of Short and Long Laminar Separation Bubbles on Desinent Cavitation **F 28**
The Numerical Prediction of Developing Turbulent Flow in Rectangular Ducts **F 445**; (D) **F 454**; (AC) **F 455**
Observations of the Various Types of Limited Cavitation on Axisymmetric Bodies **F 415**
Optimum Strut-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) **F 294**
Phase Distribution Mechanisms in Turbulent Two-Phase Flow in Channels of Arbitrary Cross Section **F 583**
A Photographic Study of Cavitation in Jet Flow **F 14**; (D) **F 370**; (AC) **F 371**
A Possible Criterion for Cavitation Inception on Hemispherical Headforms **F 577**
Prediction of Gaseous Cavitation Occurrence in Various Liquids Based on Two-Phase Flow Analogy **F 551**
Prediction and Measurement of Mass, Heat, and Momentum Transport in a Nonreacting Turbulent Flow of a Jet in an Opposing Stream **F 127**
A Prediction Method for Planar Diffuser Flows (81-FE-5) **F 315**
Pressure and Vortex Shedding Patterns Around a Low Aspect Ratio Cylinder in a Sheared Flow at Transitional Reynolds Numbers **F 88**; (D) **F 95**; (AC) **F 96**; (D) **F 373**; (AC) **F 374**
Review—Basic Research Needs in Fluid Mechanics **F 509**
REVIEW: Effect of Inlet Conditions on Conical-Diffuser Performance **F 250**
REVIEW—A Review of Some Phenomena in Turbulent Flow Separation **F 520**
REVIEW: Turbulent Developing Pipe Flow **F 243**
A Round Jet Normal to a Crossflow (80-WA/FE-18) **F 142**
Scale Effects on Various Types of Limited Cavitation **F 405**; (D) (AC) **F 414**
Search for Large-Scale Coherent Structures in the Nearly Self-Preserving Region of a Turbulent Axisymmetric Jet **F 503**
Small Hydro-Power Fluid Machinery, Symposium, preview **F 404**
Small and Micro Hydroelectric Plants (BR) **F 484**
The Stability of Pumping Systems—The 1980 Freeman Scholar Lecture **F 193**
A Theoretical Model for the Transverse Impingement of Free Jets at Low Reynolds Number (D) (AC) **F 374**
The Third Two-Dimensional Problem of Three Dimensional Blade Systems of Hydraulic Machines (D) **F 483**
The Third Two-Dimensional Problem of Three-Dimensional Blade Systems of Hydraulic Machines—Part 1: Theoretical Analysis **F 33**; Part 2: Analytical Results **F 42**
Tilting, Stretching, Pairing and Collapse of Vortex Structures in Confined Counter-Current Flow (80-WA/FE-11) **F 466**
Torque Characteristics of a 122-Centimeter Butterfly Valve With a Hydro/Pneumatic Actuator **F 396**
Transient Fluid Flow in Porous Media: Inertia-Dominated to Viscous-Dominated Transition **F 339**
Turbomachines—A Guide to Design Selection and Theory (BR) **F 644**
Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (80-WA/FE-9) **F 97**; (D) (AC) **F 372**
Turbulent Shear Flows Over a Step Change in Surface Roughness **F 344**
Two-Dimensional Performance Analysis and Design of MHD Channels **F 307**
Two-Dimensional Turbulent Offset Jet-Boundary Interaction **F 154**
Universal Similarity in the Wakes of Stationary and Vibrating Bluff Structures (80-WA/FE-4) **F 52**
Velocity Field and Entrainment of a Pulsed Core Jet **F 605**
Viscous Effects in the Inception of Cavitation **F 280**
Viscous Flow Drag Reduction (BR) **F 485**
Wake Induced Time-Variant Aerodynamics Including Rotor-Stator Axial Spacing Effects **F 59**
Wake Structure of Typical Automobile Shapes **F 162**
Fluids Engineering Meeting
Editorial **F 380**
Flutter
Dynamic Behavior of Continuous Cantilevered Pipes Conveying Fluid Near Critical Velocities (81-WA/APM-13) **AM 943**
Flutter Spectral Measurements Using Stationary Pressure Transducers **P 461**
Fluxes
High-Flux Solar Absorber Concept for Central Receiver Power Plants **SE 52**
Fly Ash
A New Approach for Erosion Prediction Due to Fly Ash (80-GT-96) **P 265**
Fodor, G. E.
Antiwear Mechanism of ZDDP in the Presence of Calcium Sulfonate Detergent **L 486**; (D) **L 494, 495**; (AC) **L 495**
Foil Bearings
Design and Performance of Compliant Thrust Bearings With Spiral-Groove Membranes on Resilient Supports (80-C2/Lub-36) **L 373**; (D) **L 385, 386**; (AC) **L 386**
Dynamic Characteristics of a High-Speed Rotor With Radial and Axial Foil-Bearing Supports (80-C2/Lub-35) **L 381**; (D) **L 370, 371**; (AC) **L 371**
Folding
Folding of Elastica-Similarity Solutions (BN) **AM 199**
Fonseka, G. U. The Continuous Damage Theory of Brittle Materials. Part 1: General Theory **AM 809**; Part 2: Unaxial and Plane Response Modes **AM 816**
Foody, B. E. On the Radial Oscillations of Multiple Gas Bubbles in an Incompressible Liquid **AM 727**
Force
A Model to Estimate Forces on Conical Penetrators Into Dry Porous Rock (81-APM-15) **AM 25**
Force Balancing Machines
A New Concept for Force Balancing Machines for Planar Linkages. Part 1: Theory (80-DET-73) **MD 837**
Force Components
The Grinding of Workpiece Materials Exhibiting High Adhesion—Part 2: Forces **I 156**
Force Control
Hybrid Position/Force Control of Manipulators **DS 126**
Force Distribution
Control of Force Distribution in Robotic Mechanisms Containing Closed Kinematic Chains **DS 134**
Forced Convection
Prediction of Growth Parameters of Frost Deposits in Forced Convection **HT 3**
Forced Plumes
The Effect of Froude Number on Entrainment in Two-Dimensional Line Plumes (81-FE-6) **F 471**

Forced Vibration
Dynamic Response of a Beam With a Geometric Nonlinearity **AM 404**
Ford, H. Thoughts on a Code of Practice for Forged High-Pressure Vessels of Monobloc Design **PVT 2**
Ford, M. J. Laser-Optical Blade Tip Clearance Measurement System **P 457**
Ford, R. A. J. The Effect of Aerodynamic Phase Lag on the Twin Vibration Mode Model of Aeroengine Fan Flutter (80-GT-166) **P 313**
Forged Vessels
Thoughts on a Code of Practice for Forged High-Pressure Vessels of Monobloc Design **PVT 2**
Forgings
Upper Bound Analysis of Axisymmetric, Closed-Dies Forgings (80-WA/PROD-1) **I 109**
Formate Gears
Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform"—Part I. Calculations For Machine Settings For Member Gear Manufacture of the Formate and Helixform Hypoid Gears (80-C2/DET-31) **MD 83**
Forrestal, M. J. Closed-Form Approximations for Forces on Conical Penetrators Into Dry Porous Rock (BN) **AM 971**; A Model to Estimate Forces on Conical Penetrators Into Dry Porous Rock (81-AMP-15) **AM 25**
Fougeres, R. Analysis Method for Both Internal Stresses and Microstructural Effect Under Pure Rolling Fatigue Conditions **L 521**
Foundations
Fan/Foundation Interaction—A Simplified Calculation Procedure **P 805**
Four-Bar Linkages
A Classification of Coupler-Line Envelopes from Hinged Four-Bar Linkages (80-DET-42) **MD 750**
Equations for Four-Bar Line-Envelopes (80-DET-40) **MD 743**; (D) (AC) **MD 749**
A New Concept for Force Balancing Machines for Planar Linkages. Part 2: Application to Four-Bar Linkage and Experiment (80-DET-74) **MD 784**
Fox, B. Location of Early Atheroma in the Human Coronary Arterie **BE 208**
Fox, H. M. Low-Pressure Plasma-Spray Coatings for Hot-Corrosion Resistance (80-GT-98) **P 146**
Fracture
Acoustic Emission Monitoring During Rupture Test of Pressure Vessel and Laboratory Fracture Test **PVT 191**
Energy-Release Rate in Elastic-Plastic Fracture Problems (81-WA/APM-21) **AM 825**
Fracture Toughness of 4130 Quenched and Tempered Steel **MT 55**
Fracture and Wear of Diamond Cutting Tools (81-WA/Mat-3) **MT 341**
Gas-Driven Fracture Propagation **AM 757**
Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) **PVT 85**
Fracture Angle
Crack Path Prediction for a Kinked Crack in the Neighborhood of a Circular Inclusion in an Infinite Medium (81-APM-31) **AM 313**
Fracture Instability
A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part I: J-Integral Analysis (80-WA/PVP-3) **PVT 352**; Part II: Experimental Verification on a Type 304 Stainless Steel Pipe (80-WA/PVP-4) **PVT 359**
Fracture Mechanics
Dynamic Crack Propagation in Precracked Cylindrical Vessels Subjected to Shock Loading **PVT 155**
Fatigue Life Predictions of Smooth and Notched Specimens Based on Fracture Mechanics **MT 91**
Fatigue of Welded Structures (BR) **MT 185**
Gas Turbine Engine Disk Retirement-for-Cause: An Application of Fracture Mechanics and NDE (80-GT-127) **P 198**
Nondestructive Evaluation of the *J* and *M* Integrals (81-APM-2) **AM 83**
Fracture Properties
An Analytical Assessment of the Effects of Residual Stresses and Fracture Properties on Service Performance of Various Weld Repair Processes **PVT 373**
Fracture Toughness
The Effect of a Higher Loading Rate on the J_{Ic} Fracture Toughness Transition Temperature of HY Steels **MT 133**
Frames
Thermal Expansion Accommodation in a Jet Engine Frame **P 776**
France, D. M. Critical Heat Flux Experiments and Correlation in a Long, Sodium-Heated Tube **HT 74**
Frank, E. H. Oscillatory Compressional Behavior of Articular Cartilage and Its Associated Electromechanical Properties **BE 280**
Franke, M. E. Frequency Response of Blocked Annular Fluid Transmission Lines **DS 356**
Frasca, P. Micromechanical Oscillators and Techniques for Determining the Dynamic Moduli of Microsamples of Human Cortical Bone at Microstrains **BE 146**
Free Air
Aerodynamic Effects of Shape, Camber, Pitch, and Ground Proximity on Idealized Ground-Vehicle Bodies **F 631**; (D) **F 637, 638**; (AC) **F 638**
Free Convection
Effective Thermal Conductivity for Combined Radiation and Free Convecion in an Optically Thick Heated Fluid Layer **HT 114**
Laminar Free Convection Boundary Layer Heat Transfer over Non-Isothermal Surface (TN) **HT 819**
Melting of a Vertical Ice Wall by Free Convection into Fresh Water **HT 13**
Free Convection Shield
Radiation and Free Convection Shield for Passive Thermal Control (80-WA/Sol-7) **SE 62**
Free Discharge
REVIEW: Effects of Inlet Conditions on Conical-Diffuser Performance **F 250**
Free Fluid Surfaces
A Computational Method for Free Surface Hydrodynamics **PVT 136**
Free Jets
A Theoretical Model for the Transverse Impingement of Free Jets at Low Reynolds Number (D) (AC) **F 374**
Free Stream Nuclei
Scale Effects on Various Types of Limited Cavitation **F 405**; (D) (AC) **F 414**
Free-Stream Turbulence
Effects of Free-Stream Turbulence on Diffuser Performance (81-FE-4) **F 385**
Wake Behavior in the Presence of Free Stream Turbulence **P 490**
Freeman Scholar Lecture
The Stability of Pumping Systems—The 1980 Freeman Scholar Lecture **F 193**
Freezing
A Closed-Form Analytical Solution for Freezing Adjacent to a Plane Wall Cooled by Forced Convection (TN) **HT 596**
The Transition from Natural-Convection-Controlled Freezing to Conduction-Controlled Freezing **HT 7**; (D) (AC) **HT 825**
Freight Car Fleet
Train Brake and Track Capacity Requirements for the '80s (81-RT-11) **I 392**
Freight Cars
Experimental Investigation of Freight Car Lateral Dynamics **DS 201**
Laboratory Investigation of Wheel Rail Contact Stresses for U.S. Freight Cars (80-WA/RT-8) **I 246**
Frene, J. Friction Reduction in Turbulent Journal Bearings by High Polymers (D) **L 317**; (AC) **L 318**
Frequencies
Computation of Seismic Response from Higher Frequency Modes (80-C2/PVP-50) **PVT 18**
Frequency Equations
Calculating Natural Frequencies With Extended Tuplin's Method (80-C2/DET-48) **MD 379**
Frequency Response
Frequency Response of Blocked Annular Fluid Transmission Lines **DS 356**
A High Order, Lumped Parameter, Jet Dynamic Model for the Frequency Response of Laminar Proportional Amplifiers **DS 317**
Fresh Water
Melting of a Vertical Ice Wall by Free Convection into Fresh Water **HT 13**
On the Prediction of Fusion Rate of Ice by Finite Element Analysis **HT 727**
Fretting Fatigue
The Effects of Periodic High Loads on Fretting Fatigue **MT 223**
A Statistically Based Investigation of The Environmental and Cyclic Stress Effects on Fretting Fatigue **MT 218**
Freudenstein, F. Current Trends in the Design of Mechanisms **MD 549**; Optimization in Mechanisms: Past, Present, and Future (CR) **MD 680**; Optimum Balancing of Combined Pitching and Yawing Moments in High-Speed Machinery (80-DET-7) **MD 571**
Freund, L. B. The Effect of Crack-Tip Plasticity on the Determination of Dynamic Stress-Intensity Factors by the Optical Method of Caustics **AM 302**
Freymuth, P. Rotational Interference for Darrieus Rotors (TB) **SE 173**
Friction
The Adhesion, Friction, and Wear of Binary Alloys in Contact With Single-Crystal Silicon Carbide (80-C2/Lub-53) **L 180**
Analytic Prediction of the Friction Factor for Turbulent Flow in Internally Finned Channels **HT 423**
A Deep Drawing Test for Determining the Punch Coefficient of Friction (80-WA/Prod-10) **I 197**
An Educational Elasticity Problem With Friction. Part I: Loading, and Unloading for Weak Friction (81-WA/APM-19) **AM 841**
On an Elastic Theory of Friction (BN) **AM 438**
Friction Between High Speed Gear Coupling Teeth (80-C2/DET-5) **MD 54**
Friction—The Present State of Our Understanding **L 169**
Friction and Wear Results From Sputter-Deposited Chrome Oxide With and Without Nichrome Metallic Binders and Interlayers (80-C2/Lub-49) **L 218**
An Improvement in the Calculation of Turbulent Friction in Smooth Concentric Annuli **F 615**
The Influence of Linear and Rotating Motions on the Friction of Polymers (80-C2/Lub-44) **L 503**; (D) **L 507**; (AC) **L 508**
Thermal Deformation in Frictionally Heated Systems (BR) **L 164**
Tribology: Friction, Lubrication, and Wear (BR) **L 320**
Friction Forces
Modeling of Nonholonomic Dynamic Systems With Applications (81-APM-12) **AM 177**
Friction Junctions
An Analysis of Contact Between a Pair of Surface Asperities During Sliding **AM 493**
Friction Reduction
Friction Reduction in Turbulent Journal Bearings by High Polymers (D) **L 317**
Friction Rotors
Planar Motion of a Rigid Body With a Friction Rotor (BN) **AM 205**
Friction Torque
Cavitation in a Short Bearing With Pressurized Lubricant Supply (80-C2/Lub-47) **L 337**; (D) **L 346**; (AC) **L 347**
Frictional Channel
The Deformation of a Thin, Incomplete, Elastic Ring in a Frictional Channel (81-WA/APM-22) **AM 895**
Frictional Heating
Surface Temperatures in Sliding Systems—A Finite Element Analysis (80-C2/Lub-28) **L 90**
Frictional Properties
Frictional Properties of a Surface Covered With a Soft Metal Film—Part I: Experiments on Friction Between a Single Protuberance and a Surface **L 236**
Frictionless Elastic Contact
A Finite Element Method for the Elastic Contact Problems **I 456**
Frictionless Surfaces
Contact Pressures on Closely Conforming Elastic Bodies **AM 543**
Friedland, B. Discrete-Time Equivalent of Continuous-Time Filtering Processes **DS 417**
Friedman, M. H. Correlation of Human Arterial

Morphology With Hemodynamic Measurements in Arterial Casts **BE 204**

Friedman, S. B. A Theoretical Model for the Transverse Impingement of Free Jets at Low Reynolds Number (D) (AC) **F 374**

Fries, R. H. Experimental Investigation of Freight Car Lateral Dynamics **DS 201**

Fringes
Interferometric Measurements in a Turbine Cascade Using Image-Plane Holography (80-GT-91) **P 124**

Front Wheel Drive
Roller Chain as a Transfer Drive for the Automobile **MD 19**

Frost Deposits
Prediction of Growth Parameters of Frost Deposits in Forced Convection **HT 3**

Froude Number
The Effect of Froude Number on Entrainment in Two-Dimensional Line Plumes (81-FE-6) **F 471**

Frounfelker, R. E. A Technical Evaluation of Modular Incinerators With Heat Recovery **ERT 265**

Fuchs, H. O. *(author)* Metal Fatigue in Engineering (1980) (BR) **MT 346**

Fuel
EBR-II Metallic Driver Fuel—A Live Option (80-C2/NE-23) **P 612**

Fuel Economy
Control Systems for Automotive Vehicle Fuel Economy: A Literature Review **DS 173**

Fuel Elements
Pellet-Cladding Interaction of LMFBR Fuel Elements at Unsteady State **P 627**

Fuel Mileage
The Development of a Perbury Traction Transmission for Motor Car Applications (80-C2/DET-59) **MD 29**

Fuel Nozzles
Some Effects of Using Water as a Test Fluid in Fuel Nozzle Spray Analysis (80-GT-90) **P 118**

Fuel Pins
Creep Relaxation of Fuel Pin Bending and Ovalling Stresses (80-C2/NE-24) **P 621**

Fuels
The Interrelationship between Soot and Fuel NO_x Control in Gas Turbine Combustors (80-GT-76) **P 43**

Fujii, S A Comparison of Cold and Reacting Flows Around a Bluff-Body Flame Stabilizer **F 328**

Fujita, H. Instantaneous Pressure Distribution Around a Sphere in Unsteady Flow **F 497**

Fujita, K. Effects of Case Depth and Relative Radius of Curvature on Surface Durability of Case-Hardened Chromium Molybdenum Steel Roller (80-C2/DET-37) **MD 474**

Fujita, T. The Effects of Regional Insolation Differences upon Advanced Solar Thermal Electric Power Plant Performance and Energy Costs (79-WA/Sol-1) **SE 213**

Fukuoka, H. Acoustoelastic Effect of Rayleigh Surface Wave in Isotropic Material **AM 119**; Acoustoelastic Effect of Thickness Oscillations (BN) **AM 966**

Fukusako, S. An Experimental Investigation of Boiling Heat Transfer of Fluorocarbon R-11 Refrigerant for Concentric-Tube Thermosyphon **HT 472**

Funaba, H. Cooling of Freely Falling Liquid Drops with a Shell of an Immiscible Volatile Liquid **HT 508**

Function Generator Mechanisms
Probabilistic Models in Computer Automated Slider-Crank Function Generator Design (80-DET-46) **MD 835**

Function Generators
Kinematic Efficiency of Non-Circular Geared Transmissions **MD 170**

Functional Adaptation
An Analytical Mode of Pauwels' Functional Adaptation Mechanism in Bone **BE 246**

Functionality
One Functionality of a New Mechanical Hand (80-C2/DET-124) **MD 277**

Fung, Y. C. *(author)* Biomechanics: Mechanical Properties of Living Tissues (BR) **BE 231**; Issues and Current Studies (BR) **BE 217**; The Lung—A Perspective of Biomechanics Development **BE 91**; The Retained Elasticity of Elastin Under Fixation Agents (TB) **BE 121**

Furnace Wall Ash
A Furnace Wall Ash Monitoring System for Coal Fired Boilers (80-WA/Fu-1) **P 532**

Furnaces
Experimental Results in the Modeling and Control of a Small Furnace **DS 370**

Furukawa, T. Some Considerations on Thermal Shock Problems in a Plate **AM 113**; (Er) **AM 686**

Fusion Magnets
A Finite Element Model for Elastic and Slip Response of Fusion Magnets (D) **PVT 127**

Fusion Rate
On the Prediction of Fusion Rate of Ice by Finite Element Analysis **HT 727**

Fuzzy Treatments
Stochastic and Fuzzy Decision Problems in Three-Workpiece Lapping Process **I 192**

G

Galford, J. E. A Structural Priority Approach to Fluid-Structure Interaction Problems **PVT 142**

Galloway, T. R. Solar-Assisted Heat Pump and Swimming Pool Synergy for Domestic Heating **SE 105**

Gallstones
Application of Hydroelastic Waves to the Removal of Small Gallstones **BE 79**

Ganatos, P. Diffusion of Macromolecules Across the Arterial Wall in the Presence of Multiple Endothelial Injuries **BE 197**

Gandhidasan, P. The Role of Rear Insulation in the Performance of Flat Plate Solar Collectors **SE 282**

Gandolfi, A. Volterra Series Expansion for Bilinear Systems in a Nonlinear Feedback Loop **DS 84**

Ganguli, A. Destabilization of Film Boiling Due to Arrival of a Pressure Shock. Part II: Analytical **HT 465**

Gaps
Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (80-WA/FE-9) **F 97**

Garcia-Gardea, E. Dynamic Analysis of Milling Machine by Torque Signals **I 235**

Gardner, G. C. Evaporation of Small Water Drops Containing Salt in a High Pressure Steam Environment (76-WA/FE-35) **F 112**

Garg, D. P. Modeling and Dynamic Response of Maglev Vehicles Subjected to Crosswind Gusts (80-WA/DSC-8) **DS 251**

Garg, S. B. L. Design Formulas for Expansion Bellows **MD 681**

Garg, S. K. Fluid Flow Through a Class of Highly-Deformable Porous Media Part I: Experiments With Air **F 432**; (D) **F 438**; (AC) **F 439**; Part II: Experiments With Water **F 440**

Garg, V. K. Fatigue Damage of the Locomotive Suspension Elements Under Random Loading (80-WA/DE-7) **MD 871**; Linear Spatial Stability of Developing Flow in a Parallel Plate Channel (BN) **AM 192**; Stability of Developing Flow in a Pipe—Nonparallel Effects (81-APM-13) **AM 243**

Garivaltis, D. S. Fatigue Damage of the Locomotive Suspension Elements Under Random Loading (80-WA/DE-7) **MD 871**

Garner, D. R. Hydrodynamic Aspects of Fatigue in Plain Journal Bearings (80-C2/Lub-19) **L 150**

Garro, A. Thermal and Thermoelastic Analysis of Spheroidal Graphite Cast Iron and Light Alloy Pistons **MD 895**

Gartling, D. K. A Numerical Study of Natural Convection in a Horizontal Porous Layer Subjected to an End-to-End Temperature Difference **HT 797**

Garud, Y. S. A New Approach to the Evaluation of Fatigue Under Multiaxial Loadings **MT 118**

Gas
Application of Mixing Length Theory to Wavy Turbulent Liquid—Gas Interface **HT 492**

Gas Bearing Pocket
An Experimental Investigation of the Pressures at the Edge of a Gas Bearing Pocket **L 593**

Gas Bearings
Externally Pressurized Two Layer Film Bearing—Gas Bearing With Liquid Layer (80-C2/Lub-41) **L 573**; (D) (AC) **L 577**

Gas Bubbles
Bubble Growth During Decompression of a Liquid (79-HT-73) **HT 56**
On the Equilibrium of Cavitation Nuclei in Liquid-Gas Solutions **F 425**; (D) (AC) **F 430**
On the Radial Oscillations of Multiple Gas Bubbles in an Incompressible Liquid **AM 727**
Scale Effects on Various Types of Limited Cavitation **F 405**; (D) (AC) **F 414**

Gas Cleanup Systems
An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) **P 552**; (D) **P 558, 559**; (AC) **P 560**

Gas Convection
Extension of the Adams-Welty Fluid Bed Heat Transfer Model to the Packed Bed Case (TN) **HT 602**

Gas Discharge Temperature
Thermal Storage Regenerator Parameters for Almost Constant Gas Discharge Temperature (TN) **HT 604**

Gas-Driven Fracture
Gas-Driven Fracture Propagation **AM 757**

Gas Enclosures
A Simplified Approach to the Evaluation of the Geometric-Mean Transmittance and Absorptance for Gas Enclosures **HT 808**

Gas Flow
Prediction of Heat Transfer Coefficients in Gas Flow Normal to Finned and Smooth Tube Banks **HT 705**

Gas Jets
Externally Pressurized Two Layer Film Bearing—Gas Bearing With Liquid Layer (80-C2/Lub-41) **L 573**; (D) (AC) **L 577**

Gas Leaks
Passive Acoustic Detection of Gas Leaks in Buried Pipes (80-WA/NC-17) **I 314**

Gas Lubrication
Dynamic Analysis of a Cantilever-Mounted Gas-Lubricated Thrust Bearing (80-C2/Lub-32) **L 157**

Gas Mixtures
The Influence of Recent Heat Transfer Data on Gas Mixtures (He-Ar, H_2-CO_2) on Closed Cycle Gas Turbines (80-GT-89) **P 114**

Gas-Particle Flow
Fundamentals of Gas-Particle Flow (BR) **F 644**
A Numerical Solution for Gas-Particle Flows at High Reynolds Numbers (81-WA/APM-10) **AM 465**

Gas Pressure
Buckling of a Clamped-Hinged Circular Arch Under Gas Pressure and Related Problems (BN) **AM 425**

Gas Shales
Modeling Capabilities for the Devonian Gas Shales **ERT 270**

Gas Turbine Engines
Application of the Semi-Loof Thin Shell Element to the Analysis of Aircraft Engine Structures **P 511**
Model Following Control of Gas Turbine Engines **DS 285**

Gas Turbines
Aerodynamic and Geometric Design Criteria for the Performance of Low Powered Vehicular Gas Turbines (80-GT-117) **P 158**
Application of Abrasive Coatings to Clearance Control in the Gas Turbine (D) **P 602**; (AC) **P 603**
The Civic: A Concept in Vortex Induced Combustion for the Solar Gemini 10 kW Gas Turbine (80-GT-54) **P 34**
The CIVIC—A Concept in Vortex Induced Combustion, Part II (81-GT-12) **P 708**
Closed-Cycle Gas Turbine Working Fluids (80-GT-135) **P 220**
The Control of Hot Corrosion in Marine Gas Turbines (80-GT-126) **P 188**
The Design, Development and Operation of Gas Turbine Radio Telemetry Systems **P 473**
An Evaluation of Steam Injected Combustion Turbine Systems (80-GT-51) **P 13**; (D) **P 17**; (AC) **P 18**
Gas Turbine Engine Disk Retirement-for-Cause: An Application of Fracture Mechanics and NDE (80-GT-127) **P 198**
The Influence of Recent Heat Transfer Data on Gas Mixtures (He-Ar, H_2-CO_2) on Closed Cycle Gas Turbines (80-GT-89) **P 114**
The Interrelationship between Soot and Fuel NO_x

Control in Gas Turbine Combustors (80-GT-76) P 43
Low-Pressure Plasma-Spray Coatings for Hot-Corrosion Resistance (80-GT-98) P 146
NO_x Removal Process by Injection of NH_3 and H_2O_2 in Gas Turbine Exhaust Gas P 589
The Nuclear Closed-Cycle Gas Turbine (HTGR-GT)—Dry Cooled Commercial Power Plant Studies (80-GT-82) P 89
The Nutating Traction Drive (80-GT-99) P 154
Outline of Plan for Advanced Reheat Gas Turbine (81-GT-28) P 772
Turbomachinery Design Considerations for the Nuclear HTGR-GT Power Plant (80-GT-80) P 65
Water-Cooled Gas Turbine Monometallic Nozzle Development (80-GT-97) P 141

Gas Velocity
Averaging Methods for Determining the Performance of Large Fans from Field Measurements (80-JPGC/Pwr-1) P 345

Gaseous Growth
The Initiation of Gaseous Microbubble Growth in Laminar Separation Bubbles F 543; (D) (AC) F 549

Gaseous Synfuels
Commercial Scale Equipment for Coal Conversion Processes ERT 155

Gases
Closed-Cycle Gas Turbine Working Fluids (80-GT-135) P 220

Gasification
Potential Advantages to Water Jet Drilling for Use in In-Situ Coal Gasification Processes (80-Pet-76) ERT 147

Gates, E. M. A Comparison of Two Optical Techniques for Measuring Cavitation Nuclei F 8; Jet Piercing of Oil Sands ERT 330

Gear Couplings
Friction Between High Speed Gear Coupling Teeth (80-C2/DET-5) MD 54

Gear Design
The Efficiency of Involute Spur Gears MD 160; (D) (AC) MD 169

Gear Dynamics
A Numerical Solution to the Dynamic Load, Film Thickness, and Surface Temperatures in Spur Gears, Part I Analysis MD 177; Part II Results MD 188; (D) (AC) MD 194

Gear Machines
Simulation of Hertzian Contacts Found in Spur Gears with a High Performance Disk Machine MD 204

Gear Mesh Stiffness
An Extended Model for Determining Dynamic Loads in Spur Gearing (80-C2/DET-90) MD 398

Gear Systems
A Dynamic Absorber for Gear Systems Operating in Resonance and Instability Regions (80-C2/DET-7) MD 364
Factors Influencing Instability and Resonances in Geared Systems (80-C2/DET-8) MD 372

Gear Technology
Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) MD 127; (D) MD 132; (AC) MD 133

Gear Teeth
Analytical and Experimental Spur Gear Tooth Temperature as Affected by Operating Variables (80-C2/DET-34) MD 219
Effects of Hunting Gear Ratio Upon Surface Durability of Gear Teeth (80-C2/DET-35) MD 227
Effects of Moving Speeds of Dynamic Loads on the Deflections of Gear Teeth MD 357
The Efficiency of Involute Spur Gears MD 160
Numerical Implementation of Complex Potentials for Gear Tooth Stress Analysis (80-C2/DET-86) MD 480

Gear Tooth Strength
Rating Gear Strength (80-C2/DET-88) MD 516

Gearing
The Analytical and Experimental Evaluation of Resonant Response in High-Speed, Lightweight, Highly Loaded Gearing (80-C2/DET-22) MD 348

Gearing Kinematics
Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) MD 127

Gears
Conformity Factor in Wildhaber-Novikov Circular-Arc Gears (80-C2/DET-15) MD 134
Effect of Asperity Interaction on Pitting in Rollers and Gears (80-C2/DET-36) MD 482
Effect of Geometry and Operating Conditions on Spur Gear System Power Loss (80-C2/DET-39) MD 151
The Efficiency of Involute Spur Gears MD 160; (D) (AC) MD 169
Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) MD 127
A Method of Local Synthesis of Gears Grounded on the Connections Between the Principal and Geodetic Curvatures of Surfaces (80-C2/DET-30) MD 114
Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform"—Part 2. Machine Setting Calculations for the Pinions of Formate and Helixform Gears MD 89
A Numerical Solution to the Dynamic Load, Film Thickness, and Surface Temperatures in Spur Gears, Part I Analysis MD 177; Part II Results MD 188

Gecim, B. A Film Thickness Analysis for Line Contacts Under Pure Rolling Conditions With a Non-Newtonian Rheological Model (80-C2/Lub-26) L 305; (D) L 313; (AC) L 314

Geers, T. L. Nonlinear Response of an Elastic Cylindrical Shell to a Transient Acoustic Wave (81-APM-10) AM 15

Gehlen, P. C. Dynamic Crack Propagation in Precracked Cylindrical Vessels Subjected to Shock Loading PVT 155

Generated Gears
Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) MD 127; (D) (AC) MD 133

Generating Rack
Table Sliding Taper Hobbing of Conical Gear Using Cylindrical Hob. Part 1: Theoretical Analysis of Table Sliding Taper Hobbing I 446; Part 2: Hobbing of Conical Involute Gear I 452

Generators
Materials for Generator Retaining Rings MT 257
Performance of a Multiphase Boiling MHD Generator P 582
Probabilistic Models in Computer Automated Slider-Crank Function Generator Design (80-DET-46) MD 835

Geneva Mechanisms
Optimization of High Speed Geneva Mechanisms (80-DET-56) MD 621

Genta, G. The Stress Distribution in Orthotropic Rotating Disks AM 559

Geodesic Curve
A Method of Local Synthesis of Gears Grounded on the Connections Between the Principal and Geodetic Curvatures of Surfaces (80-C2/DET-30) MD 114; (D) MD 124

Geography
An Analysis of the Influence of Geography and Weather on Parabolic Trough Solar Collector Design (80-C2/Sol-19) SE 98

Geometric-Mean Transmittance
A Simplified Approach to the Evaluation of the Geometric-Mean Transmittance and Absorptance for Gas Enclosures HT 808

Geometric Nonlinearity
Analytical/Experimental Correlation of a Nonlinear System Subjected to a Dynamic Load PVT 94
Dynamic Response of a Beam With a Geometric Nonlinearity AM 404

Geometrical Methods
Dynamical Systems and Evolution Equations: Theory and Applications (BR) AM 450

Geometrical Programming
Optimization of Multipass Turning With Constraints I 482

Geometrics
Aerodynamic and Geometric Design Criteria for the Performance of Low Powered Vehicular Gas Turbines (80-GT-117) P 158

Geopressured-Geothermal Reservoirs
Modeling Requirements for Geopressured-Geothermal Reservoir Production ERT 301

George, A. R. Aerodynamic Effects of Shape, Camber, Pitch, and Ground Proximity on Idealized Ground-Vehicle Bodies F 631; (D) F 637, 638; (AC) F 638

Georges, J. M. Antiwear Mechanism of ZDDP in the Presence of Calcium Sulfonate Detergent L 486; (D) L 494, 495; (AC) L 495

Georgescu, A. On a Bénard Convection in the Presence of Dielectrophoretic Forces (BN) AM 980

Geothermal Environments
Drill Stem Steels for Use in Geothermal Environments ERT 159

Geothermal Reservoirs
State-of-the-Art of Models for Geothermal Recovery Processes ERT 291

Geothermal Systems
The Effect of Magnus Force on the Scale Deposition in Geothermal Systems (TB) ERT 352

Geradin, M. *(editor)* B. M. Fraeijs de Veubeke Memorial Volume of Selected Papers (BR) AM 684

Gerbert, B. G. Some Notes on V-Belt Drives (80-C2/DET-91) MD 8

Gerhardt, T. D. A Diagonally Dominant Solution for the Cylinder End Problem (81-WA/APM-12) AM 876

Gerhart, P. M. Averaging Methods for Determining the Performance of Large Fans from Field Measurements (80-JPGC/Pwr-1) P 345

Germani, A. Volterra Series Expansion for Bilinear Systems in a Nonlinear Feedback Loop DS 84

Gessner, F. B. The Numerical Prediction of Developing Turbulent Flow in Rectangular Ducts F 445; (D) F 454; (AC) F 455

Geyer, H. Two-Dimensional Performance Analysis and Design of MHD Channels F 307

Ghajar, A. J. Reference Temperatures for Supercritical Laminar Free Convection on a Vertical Flat Plate HT 613

Ghosh, S. K. Analytical Puncture Study of Circular Metal Plates (D) PVT 206; Piercing of Cylindrical Tubes (80-C2/PVP-150) PVT 255

Glaquinta, A. R. Once-Through Cooling Potential of the Middle and Lower Mississippi River During Low Flow Conditions P 594

Glaquinta, E. V. Long-Life Fatigue Test Results for Two Nickel-Base Structural Alloys MT 128

Gilgeri, S. I. Natural Convection from a Horizontal Cylinder—Laminar Regime HT 522

Gilpin, R. R. An Experimental Investigation of Ice Formation around an Isothermally Cooled Cylinder in Crossflow HT 733; Jet Piercing of Oil Sands ERT 330

Gimbrone, M. A., Jr. The Dynamic Response of Vascular Endothelial Cells to Fluid Shear Stress BE 177

Girth Cracks
A Sensitivity Study on Numerical Analysis of Dynamic Girth Crack Propagation (80-C2/PVP-107) PVT 169

Girth Weld Repair
Evaluation of Tensile Failure of Girth Weld Repair Grooves in Pipe Subjected to Offshore Laying Stresses (80-Pet-74) ERT 48

Girth-Welded Pipes
Stress Intensity Factors Due to Residual Stresses in Thin-Walled Girth-Welded Pipes (79-PVP-30) PVT 66

Gladwell, G. M. L. The Contact Problem for Rigid Inclusion Pressed Between Two Dissimilar Elastic Half Planes AM 104

Glardon, R. A Review of the Recent Literature on the Unlubricated Sliding Wear of Dissimilar Metals (81-WA/Mat-2) MT 333

Glass
Glass as Encapsulation for Low-Cost Photovoltaic Solar Arrays SE 221

Glass Honeycomb
Design Optimization of Sinusoidal Glass Honeycomb for Flat Plate Solar Collectors SE 258

Glicksman, L. R. Modeling of a Rotary Dry Cooling Tower (80-HT-95) HT 715

Global Analysis
A Generalized Theory of Cell-to-Cell Mapping for Nonlinear Dynamical Systems (81-WA/APM-25) AM 634

Global Performance
Calculated and Experimental Data for a 118-mm Bore Roller Bearing to 3 Million DN (80-C2/Lub-14) L 274; (D) L 282; (AC) L 283

Godet, M. On the Traction Behavior of Several Lubricants (80-C2/Lub-15) L 55; Simulation of Hertzian Contacts Found in Spur Gears with a High Performance Disk Machine MD 204
Goff, R. D. The Design and Construction of Beaufort Sea Drilling Islands—Sag Delta 7 and 8 ERT 208
Goff, R. J. Experimental Study on Moving Loads on a Floating Sea Ice Road ERT 96
Gola, M. The Stress Distribution in Orthotropic Rotating Disks AM 559
Gold Film
Semi-Transparent Gold Film as Simultaneous Surface Heater and Resistance Thermometer for Nucleate Boiling Studies HT 65
Gold Surfaces
Steam Condensation on Various Gold Surfaces (81-HT-15) HT 685
Goldman, A. Numerical Solution to a Two-Dimensional Conduction Problem Using Rectangular and Cylindrical Body-Fitted Coordinate Systems HT 753
Goldschmidt, V. W. The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-130 F 119; (D) (AC) F 126
Golueke, C. G. Biogasification of Municipal Solid Wastes ERT 180
Gomaa, A. Measuring the Actual Endurance Limit of One Specimen Using a Nondestructive Method MT 71
Gomez, M. A. The Time and History-Dependent Viscoelastic Properties of the Canine Medial Collateral Ligament BE 293
Gosman, A. D. The Prediction of Three-Dimensional Discrete-Hole Cooling Processes—Part 2: Turbulent Flow HT 141
Gough, D. *(reviewer)* Enzyme Engineering, Future Directions (BR) BE 217
Governor Valves
A First Principles Model for Steam Turbine Control Analysis DS 61
Graham, C. G. Boundary Layer Studies on Highly Loaded Cascades using Heated Thin Films and a Traversing Probe (80-GT-137) P 237
Grain Size
An Analysis of Grain Size and Yield Stress Effects on Stress at Fatigue Limit and Threshold Stress Intensity Factor MT 229
Grandjean, N. R. An Analysis of the Influence of Geography and Weather on Parabolic Trough Solar Collector Design (80-C2/Sol-19) SE 98
Grandt, A. F., Jr. Stress Intensity Factors for Corner Cracked Holes Under General Loading Conditions MT 171
Grannemann, G. N. In Situ Biofouling of Ocean Thermal Energy Conversion (OTEC) Evaporator Tubes SE 121
Grantham, W. J. Estimating Reachable Sets (TB) DS 420
Granular Material
A Micromechanical Description of Granular Material Behavior AM 339
Grasping Systems
On Functionality of a New Mechanical Hand (80-C2/DET-124) MD 277
Gravel
The Design and Construction of Beaufort Sea Drilling Islands—Sag Delta 7 and 8 ERT 208
Gravitation
The Study of Sluice Gate and Sharp-Crested Weir Through Hodograph Transformations (81-APM-23) AM 229
Gravity
Boiling Burnout During Crossflow over Cylinders, beyond the Influence of Gravity HT 478
The Effect of Gravity on Certain Curved Channel Potential Flows (81-FE-19) F 639
Green, I. Dynamic Analysis of a Cantilever-Mounted Gas-Lubricated Thrust Bearing (80-C2/Lub-32) L 157
Green, T. F. Transient Response of a Latent Heat Storage Unit: An Analytical and Experimental Investigation SE 275
Greenwood, J. A. A Film Thickness Analysis for Line Contacts Under Pure Rolling Conditions With a Non-Newtonian Rheological Model (80-C2/Lub-26) L 306; (D) L 313; (AC) L 314
Greif, R. Natural Convection in Undivided and Partially Divided Rectangular Enclosures HT 623
Greitzer, E. M. The Stability of Pumping Systems—The 1980 Freeman Scholar Lecture F 193
Griffin, J. N. The Simultaneous Analytical Synthesis of Mass and Spring Elements in Planar Mechanisms (80-DET-50) MD 758
Griffin, O. M. Pressure and Vortex Shedding Patterns Around a Low Aspect Ratio Cylinder in a Sheared Flow at Transitional Reynolds Numbers (D) F 95; (AC) F 96; Universal Similarity in the Wakes of Stationary and Vibrating Bluff Structures (80-WA/FE-4) F 52
Griffiths, S. K. On the Transient Convective Transport from a Body of Arbitrary Shape HT 92
Grinding
Adaptive Control Optimization of Grinding (80-WA/PROD-12) I 103; (D) I 352; (AC) I 353
The Grinding of Workpieces Exhibiting High Adhesion—Part 1: Mechanisms I 144
Grinding Mechanisms
The Grinding of Workpiece Materials Exhibiting High Adhesion—Part 2: Forces I 156
Grinding Wheels
Functional Assessment of the Grinding Wheel Surface Characteristics by Turbulence Amplifier I 99
Optimum Design of an Abrasive Disk MD 818
Order Statistical Approach to Ground Surface Generation I 23
The Role of Wheel-Work Deflection in Grinding Operations (80-WA/PROD-11) I 73
Grit Simulation
Single Grit Simulation of the Abrasive Machining of Wood (80-WA/PROD) I 1
Grodzinsky, A. J. Oscillatory Compressional Behavior of Articular Cartilage and Its Associated Electromechanical Properties BE 283; The Significance of Electromechanical and Osmotic Forces in the Nonequilibrium Swelling Behavior of Articular Cartilage in Tension BE 221
Grooves
Evaluation of Tensile Failure of Girth Weld Repair Grooves in Pipe Subjected to Offshore Laying Stresses (80-Pet-74) ERT 48
Natural Convection and Sidewall Losses in Trapezoidal Groove Collectors SE 167
Grossman, G. Design Improvements in LiBr Absorption Chillers for Solar Applications SE 56
Grossman, W. D. The Significance of Electromechanical and Osmotic Forces in the Nonequilibrium Swelling Behavior of Articular Cartilage in Tension BE 221
Ground Surface
Order Statistical Approach to Ground Surface Generation I 23
Ground Transportation Systems
Drag Calculations for Vehicles in Very Long Tubes From Turbulent Flow Theory F 361
Ground Vehicles
Aerodynamic Effects of Shape, Camber, Pitch, and Ground Proximity on Idealized Ground-Vehicle Bodies F 631; (D) F 637, 638; (AC) F 638
Group Velocity
Liquid Sheet Jet Experiments: Comparison With Linear Theory F 595; (D) F 603; (AC) F 604
Growth Parameters
Prediction of Growth Parameters of Frost Deposits in Forced Convection HT 3
Growth Rates
Liquid Sheet Jet Experiments: Comparison With Linear Theory F 595; (D) F 603; (AC) F 604
Gruel, R. L. Piping Response to Steam-Generated Water Hammer PVT 219
Guenther, D. A. Separation Efficiency of a Cyclone Separator with a Turbulence-Suppressing Rotating-Insert (80-IPC-Pwr-11) P 566
Guggenheim, S. Results of an Industry/University Survey of Machine Systems Design Education MD 687
Guideways
Guideway-Suspension Tradeoffs in Rail Vehicle Systems DS 237
Gulhati, S. K. Model Studies on Immediate Settlement Behavior of Submarine Pipelines ERT 254
Gulič, M. G. A Mathematical Model for Heat Transfer in Combustion Chambers of Steam Generators P 545
Gunter, E. J. Influence of Acceleration on the Critical Speed of a Jeffcott Rotor (80-GT-88) P 108
Gupta, B. B. A One-Dimensional Model of Simultaneous Hemodialysis and Ultrafiltration With Highly Permeable Membranes BE 261
Gupta, K. C. Design and Evaluation of Drag-Link Driven Cams (80-DET-38) MD 592
Gupta, P. K. Calculated and Experimental Data for a 118-mm Bore Roller Bearing to 3 Million DN (80-C2/Lub-14) L 274; (D) L 281; (AC) L 283; On the Traction Behavior of Several Lubricants (80-C2/Lub-15) L 55
Gupta, S. C. Linear Spatial Stability of Developing Flow in a Parallel Plate Channel (BN) AM 192; Stability of Developing Flow in a Pipe—Nonparallel Effects (81-APM-13) AM 243
Gupta, S. K. Model Studies on Immediate Settlement Behavior of Submarine Pipelines ERT 254
Gurney, T. R. *(author)* Fatigue of Welded Structures (BR) MT 185
Gustafson, M. J. Friction Between High Speed Gear Coupling Teeth MD 54; (D) MD 60; (AC) MD 60
Gustafsson, K. G. Roller Chain as a Transfer Drive for the Automobile MD 19
Gutman, Y. Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) MD 127; (D) MD 133; (AC) MD 133; A Method of Local Synthesis of Gears Grounded on the Connections Between the Principal and Geodetic Curvatures of Surfaces (80-C2/DET-30) MD 114; Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform"—Part 1. Calculations for Machine Settings for Member Gear Manufacture of the Formate and Helixform Hypoid Gears (80-C2/DET-31) MD 83; Part 2. Machine Setting Calculations for the Pinions of Formate and Helixform Gears MD 89; Part 3. Analysis and Optimal Synthesis Methods for Mismatch Gearing and its Application for Hypoid Gears of "Formate" and "Helixform" (80-C2/DET-33) MD 102
Gvozdenac, D. D. A Mathematical Model for Heat Transfer in Combustion Chambers of Steam Generators P 545
Gyroscopic Forces
Nonlinear Harmonic Oscillations of Gyroscopic Structural Systems and the Case of a Rotating Ring (81-WA/APM-2) AM 627

H

Hac, Te. V. Generation of Oscillating Jets
Hack, R. L. An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) P 758
Haddow, J. B. Plane Elastic Waves Generated by Dynamical Loading Applied to Edge of Circular Hole (81-WA/APM-4) AM 577
Haftka, R. T. Optimum Design of an Abrasive Disk MD 818
Hagedorn, P. *(author)* Nonlinear Oscillations (BR) AM 988
Haines, R. S. On Predicting Vibrations in Realistically Proportioned Linkage Mechanisms (80-DET-4) MD 706
Hajl-Sheikh, A. Conduction of Heat Across Rectangular Cellular Enclosures HT 591
Hajji, A. Fluid Flow Through a Class of Highly-Deformable Porous Media Part 1: Experiments With Air F 432; (D) F 438; (AC) F 439
Hale, D. A. Low Cycle Fatigue of Commerical Piping Steels in a BWR Primary Water Environment MT 15
Half-Bead Weld Repair
Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) PVT 85
Half Plane
Transient Response of a Finite Crack in a Half Plane Under Impact Load AM 534
Half Space
Scattering of Rayleigh Waves by a Plate Attached to a Half Space Through a Viscous Couplant (81-WA/APM-24) AM 681
Hall, A. S. Linkage Characteristic Polynomials:

Definitions, Coefficients by Inspection (80-DET-8) MD 578
Hall, A. S., Jr. Closure Equations for a Six-Link Coupler-Drive Mechanism MD 236
Hall, R. E. Performance and Air Pollutant Emissions of an Experimental Water/Residual Oil Emulsion Burner in a Commercial Boiler P 788
Halliday, K. R. (reviewer) Fluid Power With Applications (BR) F 484
Halloway, L. (author) Glass Reinforced Plastic in Construction: Engineering Aspects By Leonard Halloway (BR) MT 78
Halsted, D. M., III Optimum Vibration Absorbers for Linear Damped Systems MD 908
Hamill, J. An Evaluation of Steam Injected Combustion Turbine Systems (80-GT-51) P 13; (D) P 17; (AC) P 18
Hammers
The Hammer QSD-Quick Stop Device for High Speed Machining and Rubbing (80-WA/PROD-13) I 13
Hammond, J. K. Nonstationary Response of Vehicles in Rough Ground—A State Space Approach DS 245
Han, T. Y. The Study of Sluice Gate and Sharp-Crested Weir Through Hodograph Transformations (81-APM-23) AM 229
Hand Motions
A Mathematical Model of Hand Transfer Motion for Application to Manipulator Control DS 152
Hanks, R. W. Laminar-Turbulent Transition in Pipeflow of Casson Model Fluids ERT 318
Hanley, M. A. Factors Affecting Fatigue Strength of Nylon Gears (80-C2/DET-104) MD 543
Hanna, M. C. An Iterative Boundary Integral Numerical Solution for General Steady Heat Conduction Problems HT 26
Hansen, J. E. Linear Prediction Theory for Digital Simulation of Sea Waves (81-Pet-7) ERT 243
Hansen, J. S. Mode Interaction of Axially Stiffened Cylindrical Shells: Effects of Stringer Axial Stiffness, Torsional Rigidity, and Eccentricity (81-WA/APM-28) AM 915
Hansen, K. E. Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) F 391; (D) (AC) F 395
Hansen, P. K. Some Experiments on the Steady State Characteristics of a Cylindrical Fluid-Film Bearing Considering Thermal Effects (80-C2/Lub-34) L 107
Hanus, G. J. Influence of Mach Number and End Wall Cooling on Secondary Flows in a Straight Nozzle Cascade (80-GT-52) P 257; (D) P 263; (AC) P 264
Hard Facings
The Wear of a Chromium Carbide Hard Facing: The Effect of High Gas Pressure on Wear Transitions (80-C2/Lub-5) L 228
Hard Protuberance
Frictional Properties of a Surface Covered With a Soft Metal Film—Part 1: Experiments on Friction Between Single Protuberance and a Surface L 236
Hardcastle, K. Theoretical and Experimental Study of an Air Solar Collector with an Evacuated Tube Cover SE 251
Harding, C. F. Some Effects of Using Water as a Test Fluid in Fuel Nozzle Spray Analysis (80-GT-90) P 118
Harding, J. (editor) Mechanical Properties at High Rates of Strain. 1979. Proceedings of the Second Conference on the Mechanical Properties of Materials at High Rates of Strain (BR) AM 685
Harmonic Oscillations
Nonlinear Harmonic Oscillations of Gyroscopic Structural Systems and the Case of a Rotating Ring (81-WA/APM-2) AM 627
Harmonic Waves
Harmonic Waves in Fiber-Reinforced Orthotropic Elastic Composites (BN) AM 967
Haroun, M. A. Earthquake Response of Deformable Liquid Storage Tanks (80-C2/PVP-79) AM 411
Harper, R. A. Micromechanical Oscillators and Techniques for Determining the Dynamic Moduli of Microsamples of Human Cortical Bone at Microstrains BE 146
Harpole, G. M. Droplet Evaporation in High Temperature Environments (79-WA/HT-6) HT 86
Harris, G. F., Effects of Subject Position on Balance Platform Measurements (TB) BE 213
Harris, J. A., Jr. Gas Turbine Engine Disk Retirement-for-Cause: An Application of Fracture Mechanics and NDE (80-GT-127) P 198
Harris, J. S. The Transition from Natural-Convection-Controlled Freezing to Conduction-Controlled Freezing HT 7
Harris, M. J. Construction and Startup Performance of the Miamisburg Salt-Gradient Solar Pond SE 11
Harrison, I. R. Redesign of Structural Vibration Modes by Finite-Element Inverse Perturbation (80-GT-167) P 319
Harrison, R. F. Nonstationary Response of Vehicles on Rough Ground—A State Space Approach DS 245
Harry, R. Measuring the Actual Endurance Limit of One Specimen Using a Nondestructive Method MT 71
Harsha, P. T. (reviewer) Computational Fluid Dynamics (BR) F 367; Computational Fluid Dynamics, Vol. 2 (BR) F 367
Hartmann, A. J. Nonlinear Dynamic Analysis of a Structure Subjected to Multiple Support Motions (80-C2/PVP-52) PVT 27
Hartnett, M. J. Contact Stresses Between Elastic Cylinders: A Comprehensive Theoretical and Experimental Approach (80-C2/Lub-29) L 40
Harvey, H. S. Experimental Comparison of Control Strategies for Solar Energy Systems Incorporating Dual Storage Tanks SE 47
Hasan, M. M. Boiling Burnout During Crossflow over Cylinders, beyond the Influence of Gravity HT 478
Hasan, M. Z. Boiling Burnout During Crossflow over Cylinders, beyond the Influence of Gravity HT 478
Hasegawa
Order Statistical Approach to Ground Surface Generation I 23
Hashemi, J. Contact Pressures on Closely Conforming Elastic Bodies AM 543
Hashiguchi, K. Constitutive Equations of Elastoplastic Materials With Anisotropic Hardening and Elastic-Plastic Transition AM 297
Hashimoto, M. Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part I: Plain Milling With a Single-Toothed Helical Cutter (80-WA/Prod-4) I 165; Part II: Plain Milling With a Multitoothed Helical Cutter (80-WA/Prod-5) I 174
Hashin, Z. Fatigue Failure Criteria for Unidirectional Fiber Composites AM 846
Haspel, R. A. Experimental Study on Moving Loads on a Flotating Sea Ice Road ERT 96
Hasselman, D. P. H. (editor) Thermal Stresses in Severe Environments (BR) AM 453
Hassenpflug, H. L. Influence of Acceleration on the Critical Speed of a Jeffcott Rotor (80-GT-88) P 106
Hasson, D. F. The Effect of a Higher Loading Rate on the J_{Ic} Fracture Toughness Transition Temperature of HY Steels MT 133
Hata, K.
On One Analysis of Piercing by the Use of Flow Lines (TB) I 233
Haug, E. J. Computer-Aided Design Sensitivity Analysis and Optimization of Dynamic Systems (CR) MD 678; Design Sensitivity Analysis of Planar Mechanism and Machine Dynamics (80-DET-6) MD 560
Hauser, G. M. Effective Thermal Conductivity for Combined Radiation and Free Convection in an Optically Thick Heated Fluid Layer HT 114
Hayashi, K. Energy-Release Rate and Crack Kinking Under Combined Loading AM 520; On Branched, Interface Cracks (81-APM-20) AM 529
Haymann-Haber, G. Comparison of Experimental and Computational Shock Structure in a Transonic Compressor Rotor (80-GT-81) P 78
He, M. Y. The Penny-Shaped Crack and the Plane Strain Crack in an Infinite Body of Power-Law Material AM 830
Headforms
Cavitation Inception Observations on Six Axisymmetric Headforms F 273; (D) (AC) F 279
Cavitation Inception Tests on Axisymmetric Headforms F 268
Healey, A. J. Analysis of the Horizontal to Vertical Orientation of Deep Water Risers (80-Pet-67) (TB) ERT 106; Finite Element Analysis With the State Variable Transfer Matrix and Geometric Nonlinearity for Marine Pipelines in Subsurface Tow (80-Pet-47) ERT 26
Health Hazards
Continuous Miner Noise (80-WA/NC-4) I 262
Healzer, J. M. Application of Mixing Length Theory to Wary Turbulent Liquid—Gas Interface HT 492
Heart Valves
Experimental Measurements of the Flow-Induced Shear Stress Distribution in the Vicinity of Prosthetic Heart Valves BE 267
On the Hemolytic and Thrombogenic Potential of Occluder Prosthetic Heart Valves From In-Vitro Measurements BE 53
Heat
Conduction of Heat Across Rectangular Cellular Enclosures HT 591
Construction and Startup Performance of the Miamisburg Salt-Gradient Solar Pond SE 11
Prediction of the Operating Temperature of Thrust Bearings (80-C2/Lub-30) L 97
Heat Balance
Approximate Solution to Neumann Problem for Soil Systems (80-Pet-14) ERT 76
Heat Conduction
Dynamic Analysis of a Torsion Test Specimen Including Heat Conduction and Plastic Flow MT 201
Heat Conduction Through a Flat Punch AM 871
Heat Conduction through "Yin-Yang" Bodies (TN) HT 600
Helium Penetration in Evacuated Solar Collectors: Theory and Effect on Their Performance (TB) SE 175
An Iterative Boundary Integral Numerical Solution for General Steady Heat Conduction Problems HT 26
Planar Hertz Contact With Heat Conduction AM 549
Similarity Rule for Solidification Heat Transfer with Change in Volume (TN) HT 173
The Transition from Natural-Convection-Controlled Freezing to Conduction-Controlled Freezing HT 7
Heat Engine System
An OTEC Pilot Plant Heat Engine ERT 172
Heat Exchange
A Single-Stage Ammonia/Water Absorption Cycle With Integrated Heat Exchange Components SE 42
Heat Exchangers
Design and Evaluation of Evaporating Lens Direct Contact Heat Exchangers ERT 1218
A Detailed Transient Model of an OTEC Evaporator P 539
A General Theory of Wet Surface Heat Exchangers and Its Application to Regenerative Evaporative Cooling HT 579
Heat-Exchanger Effectiveness in Thermoelastic Power Generation HT 693
Log-Mean Temperature-Difference Correction Factors for Passive Latent-Heat Storage Units SE 281
A Parametric Study of a Particulate Direct Contact Heat Exchanger (78-WA/HT-16) HT 586
Some Fundamental Relationships for Tubular Heat Exchanger Thermal Performance HT 573
Transient Response of a Latent Heat Storage Unit: An Analytical and Experimental Investigation SE 275
Use of Lead/Lag Approximations in Modeling Thermal Regenerator Systems DS 49
Vibration in Nuclear Heat Exchangers Due to Liquid and Two-Phase Flow (80-C2/NE-4) P 358
Heat Flow
Planar Hertz Contact With Heat Conduction AM 549
Unsteady Heat Flow between Solids with Partially Contacting Interface HT 32
Heat Flux
Critical Heat Flux Experiments and Correlation in a Long, Sodium-Heated Tube HT 74
The Exact Solutions of Some Stefan Problems With Prescribed Heat Flux AM 732
An Experimental Investigation of Boiling Heat Trans-

fer of Fluorocarbon R-11 Refrigerant for Concentric-Tube Thermosyphon HT 472
A Furnace Wall Ash Monitoring System for Coal Fired Boilers (80-WA/Fu-1) P 532
Heat Transfer in the Accelerated Fully Rough Turbulent Boundary Layer HT 153
A Methodology of Predicting Cavity Geometry Based on the Scanned Surface Temperature Data—Prescribed Heat Flux at the Cavity Side (79-WA/HT-45) HT 42
Nongray Particulate Radiation in an Isothermal Cylindrical Medium HT 121
Steady-State Temperature Distribution in a Rotating Roll Subject to Surface Heat Fluxes and Convective Cooling HT 36

Heat Generation

Thermal Effects on Traction in EHD Lubrication L 533

Heat Pump Systems

Design Procedure and Application of Solar-Assisted Series Heat Pump Systems SE 135

Heat Pumps

Solar-Assisted Heat Pump and Swimming Pool Synergy for Domestic Heating SE 105

Heat Recovery

An Evaluation of Steam Injected Combustion Turbine Systems (80-GT-51) P 13
Log-Mean Temperature-Difference Correction Factors for Passive Latent-Heat Storage Units SE 281
A Technical Evaluation of Modular Incinerators With Heat Recovery ERT 265

Heat Transfer

Analytic Prediction of the Friction Factor for Turbulent Flow in Internally Finned Channels HT 423
An Analytical and Experimental Investigation of Bubble Waiting Time in Nucleate Boiling HT 673
Analytically Determined Fin-Tip Heat Transfer Coefficients HT 18
Anisotropic Two-Dimensional Scattering: Comparison of Experiment with Theory HT 127
Applicability of the Bubble Flux Density Concept (TN) HT 175
Application of Mixing Length Theory to Wary Turbulent Liquid—Gas Interface HT 492
Application of the P-1 Approximation to Radiative Heat Transfer in a Nongray Medium (TN) HT 182
Boiling Burnout During Crossflow Over Cylinders, beyond the Influence of Gravity HT 478
Bubble Growth During Decompression of a Liquid (79-HT-73) HT 56
Calculated and Experimental Data for a 118-mm Bore Roller Bearing to 3 Million DN (80-C2/Lub-14) L 274; (D) L 282; (AC) L 283
A Closed-Form Analytical Solution for Freezing Adjacent to a Plane Wall Cooled by Forced Convection (TN) HT 596
Combined Free and Forced Convection in Vertical Tubes with Radial Internal Fins HT 566
A Comparison of Thermal Performance of Two and Four Tube Pass Designs for Split Flow Shells HT 169
Conduction of Heat Across Rectangular Cellular Enclosures HT 591
Conduction Shape Factors for Certain Multi-Hole Prismatic Bars (TN) HT 821
Convective Heat Transfer to Turbulent Droplet Flow in Circular Tubes HT 679
Cooling of Freely Falling Liquid Drops with a Shell of an Immiscible Volatile Liquid HT 508
Correlation of Pressure Undershoot During Hot-Water Depressurization HT 52
Critical Heat Flux Experiments and Correlation in Long, Sodium-Heated Tube HT 74
Critical Heat Flux in Helically Coiled Tubes HT 660
Dense, Vertical Jets with Two Opposing Buoyancy Components HT 135
Density-Wave Oscillations in Sodium Heated Once-Through Steam Generator Tubes HT 485
Destabilization of Film Boiling Due to Arrival of a Pressure Shock: Part I Experimental HT 459; Part II: Analytical HT 465
Developing Laminar Free Convection in an Open Ended Vertical Annulus with a Rotating Inner Cylinder HT 552
Double Diffusive Instability in a Vertical Layer of a Porous Medium (TN) HT 179
Droplet Evaporation in High Temperature Environments (79-WA/HT-6) HT 86
The Effect of Crossflow at the Entrance on Heat Transfer Enhancement in Tubes (TN) HT 178
Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate (D) HT 824; (AC) HT 825
Effect of Knudsen Number on Dropwise Condensation (TN) HT 606
Effect of Plenum Length and Diameter on Turbulent Heat Transfer in a Downstream Tube and on Plenum-Related Pressure Losses HT 415
Effect of Vertical Separation Distance and Cylinder-to-Cylinder Temperature Imbalance on Natural Convection for a Pair of Horizontal Cylinders HT 638
Effective Thermal Conductivity for Combined Radiation and Free Convection in an Optically Thick Heated Fluid Layer HT 114
Effects of Axial Conduction and Convective Boundary Conditions in Slug Flow inside a Circular Tube HT 436
Effects of Free-Stream Turbulence Intensity and Frequency on Heat Transfer to Turbine Blading (80-GT-79) P 60
The Effects of Nonuniform Heat Transfer from an Annular Fin of Triangular Profile (TN) HT 184
An Exact Solution of the Sublimation Problem in a Porous Medium HT 185
Experimental and Analytical Investigation of a Natural Circulation System with Parallel Loops HT 645
An Experimental Investigation of Boiling Heat Transfer of Fluorocarbon R-11 Refrigerant for Concentric-Tube Thermosyphon HT 472
An Experimental Investigation of Ice Formation around an Isothermally Cooled Cylinder in Crossflow HT 733
An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large Scale Turbine Blade Cascade (D) (AC) P 602
Extension of the Adams-Welty Fluid Bed Heat Transfer Model to the Packed Bed Case (TN) HT 602
Flow Structure with Natural Convection in Inclined Air-Filled Enclosures HT 535
Force Convection Heat Transfer at an Inclined and Yawed Square Plate—Application to Solar Collectors (D) HT 824; (AC) HT 825
A General Extended Surface Analysis Method HT 699
A General Theory of Wet Surface Heat Exchangers and its Application to Regenerative Evaporative Cooling HT 579
A Generalization of the System Mean Void Fraction Model for Transient Two-Phase Evaporating Flows HT 81
Heat Conduction through "Yin-Yang" Bodies (TN) HT 600
Heat-Exchanger Effectiveness in Thermoelectric Power Generation HT 693
Heat and Momentum Transfer in a Plane Turbulent Wall Jet HT 138
Heat Transfer in the Accelerated Fully Rough Turbulent Boundary Layer HT 153
Heat Transfer in Air Enclosures of Aspect Ratio Less than One HT 617
Heat Transfer in a Capillary Flow Emerging from a Reservoir HT 429
Heat Transfer from a Cone Spinning in a Corotating Fluid (TN) HT 815
Heat Transfer in Cooled Porous Region with Curved Boundary HT 765
Heat Transfer and Interface Motion During Melting and Solidification around a Finned Heat Source/Sink (80-HT-10) HT 720
Heat Transfer from a Plate Elevated above a Host Surface and Washed by a Separated Flow Induced by the Elevation Step HT 441
Homogeneous Nucleation and the Spinodal Line HT 61
A Horizontal Flow Past a Partially Heated, Infinite Vertical Cylinder HT 546
The Influence of Recent Heat Transfer Data on Gas Mixtures (He-Ar, H_2-CO_2) on Closed Cycle Gas Turbines (80-GT-89) P 114
The Influences of Property Variations on Natural Convection from Vertical Surfaces HT 609
An Integral Analysis for Heat Transfer in Turbulent Incompressible Boundary Layer Flow HT 772
An Iterative Boundary Integral Numerical Solution for General Steady Heat Conduction Problems HT 26
Laminar Free Convection Boundary Layer Heat Transfer over Non-Isothermal Surface (TN) HT 819
Laminar Mixed Convection in a Shrouded Fin Array HT 559
Local Heat Transfer and Fluid Flow Characteristics for Airflow Oblique or Normal to Square Plate (D) HT 824; (AC) HT 825
A Mathematical Model for Heat Transfer in Combustion Chambers of Steam Generators P 545
Measured Heat Transfer Coefficients at and Adjacent to the Tip of a Wall-Attached Cylinder in Crossflow—Application to Fins HT 778
Melting of a Vertical Ice Wall by Free Convection into Fresh Water HT 13
A Methodology of Predicting Cavity Geometry Based on the Scanned Surface Temperature Data—Prescribed Heat Flux at the Cavity Side (79-WA/HT-45) HT 42
Microconvective Thermal Conductivity in Disperse Two-Phase Mixtures as Observed in a Low Velocity Couette Flow Experiment HT 47
Mixed Convection Heat Transfer from Horizontal Cylinders in the Crossflow of a Finite Water Layer HT 540
Modeling of a Rotary Dry Cooling Tower (80-HT-95) HT 715
Natural Convection Heat Transfer Between Cylindrical Tube Bundles and a Cubical Enclosure HT 103
Natural Convection Heat Transfer Coefficients for a Short Horizontal Cylinder Attached to a Vertical Plate HT 630
Natural Convection from a Horizontal Cylinder-Laminar Regime HT 522
Natural Convection in Horizontal Duct Connecting Two Fluid Reservoirs HT 108
Natural Convection in Undivided and Partially Divided Rectangular Enclosures HT 623
Natural Convective Boundary-Layer on Two-Dimensional and Axisymmetric Surfaces in High-Pr Fluids or in Fluid-Saturated Porous Media HT 803
A Nondimensional Analysis of Boiling Dry a Vertical Channel with a Uniform Heat Flux HT 667
Nongray Particulate Radiation in an Isothermal Cylindrical Medium HT 121
A Numerical Solution to Dropwise Evaporation HT 501
Numerical Solution to a Two-Dimensional Conduction Problem Using Rectangular and Cylindrical Body-Fitted Coordinate Systems HT 753
A Numerical Study of Natural Convection in a Horizontal Porous Layer Subjected to an End-to-End Temperature Difference HT 797
Optimized Performance of Condensers with Outside Condensing Surfaces HT 96
Optimum Cylindrical Pin Fin (TN) HT 814
A Parametric Study of a Particulate Direct Contact Heat Exchanger (78-WA/HT-16) HT 586
Perturbation Solutions of Transient Heat Transfer to a Porous Medium from a Fluid Stream (79-WA/HT-44) HT 159
Phase Change around a Circular Cylinder (TN) HT 598
Pioneering Contributions to Our Knowledge of Convective Heat Transfer (80-HT-137) HT 409
On the Prediction of Fusion Rate of Ice by Finite Element Analysis HT 727
Prediction of Growth Parameters of Frost Deposits in Forced Convection HT 3
Prediction of Heat Transfer Coefficients in Gas Flow Normal to Finned and Smooth Tube Banks HT 705
The Prediction of Three-Dimensional Discrete-Hole Cooling Processes—Part 2: Turbulent Flow HT 141
Prediction of Transient Inception of Boiling in Terms of a Heterogeneous Nucleation Theory (80-HT-113) HT 80
Quasi-Steady-State Temperature Distribution in Periodically Contacting Finite Regions HT 739
Reference Temperature for Supercritical Laminar Free Convection on a Vertical Flat Plate HT 613
Refilling and Rewetting of a Hot Horizontal Tube. Part

III: Application of a Two-Fluid Model to Analyze Rewetting HT 653
Reflections on the History of Heat and Mass Transfer in Bioengineering BE 97
Semi-Transparent Gold Film as Simultaneous Surface Heater and Resistance Thermometer for Nucleate Boiling Studies HT 65
Similarity Rule for Solidification Heat Transfer with Change in Volume (TN) HT 173
A Simplified Approach to the Evaluation of the Geometric-Mean Transmittance and Absorptance for Gas Enclosures HT 808
Some Fundamental Relationships for Tubular Heat Exchanger Thermal Performance HT 573
Steady Laminar Flow through Twisted Pipes. Fluid Flow in Square Tubes HT 785
Steady Laminar Flow Through Twisted Pipes. Heat Transfer in Square Tubes HT 791
Steady-State Temperature Distribution in a Rotating Roll Subject to Surface Heat Fluxes and Convective Cooling HT 36
Steam Condensation on Various Gold Surfaces (81-HT-15) HT 685
A Study of Some Turbulence Models for Flow and Heat Transfer in Ducts of Annular Cross-Section HT 146
Surface Contamination, Rejuvenation, and the Reproducibility of Results in Nucleate Pool Boiling HT 453
System Approach to the Thermal Behavior and Deformation of Machine Tool Structures in Response to the Effect of Fixed Joints (80-WA/PROD-14) I 67
Thermal Convection at Low Rayleigh Number from Concentrated Sources in Porous Media (Er) HT 527
Thermal Storage Regenerator Parameters for Almost Constant Gas Discharge Temperature TN) HT 604
Thermally Symmetric Nonlinear Heat Transfer in Solids HT 745
A Three-Dimensional Air-Vapor-Droplet Local Interaction Model for Spray Units HT 514
On the Transient Convective Transport from a Body of Arbitrary Shape HT 92
Transient Natural Convection Heat Transfer of Water with Maximum Density Effect and Supercooling (80-HT-74) HT 528
Transient Thermal Expansion of Solids During Inert Heating, Phase Change, and Surface Gasification (TN) HT 601
The Transition from Natural-Convection-Controlled Freezing to Conduction-Controlled Freezing HT 7; (D) (AC) HT 825
Tube Wall Temperatures of an Eccentrically Located Horizontal Tube within a Narrow Annulus with Tube Contact (TN) HT 186
Unsteady Heat Flow between Solids with Partially Contacting Interface HT 32
Unsteady Stagnation Point Heat Transfer with Blowing or Suction HT 448
Unsteady Surface Element Method HT 759

Heat Treating
Strong Tough HSLA Steels Via Processing and Heat Treating of Cu-Ni-Cb and Cu-Ti-B Compositions MT 207

Heated Annular Plates
Elastic Instability of a Heated Annular Plate Under Lateral Pressure AM 399

Heating Systems
The Interrelation between Recurrent and Capital Costs in a Solar Thermal Process Heat System SE 241

Heavy Columns
Stability of a Heavy Column With an End Load (BN) AM 668

Heavy Elastic Shells
Equilibrium of Heavy Elastic Cylindrical Shells AM 582

Hedrick, J. K. A Comparison of the Stability and Curving Performance of Radial and Conventional Rail Vehicle Trucks DS 101; Improved Statistical Linearization for Analysis and Control of Nonlinear Stochastic Systems—Part 1: An Extended Statistical Linerization Technique DS 14; Part II: Application to Control System Design DS 22
Stability and Curving Mechanics of Rail Vehicles (80-WA/DSC-15) DS 181

Heggs, P. J. The Effects of Nonuniform Heat Transfer from an Annular Fin of Triangular Profile (TN) HT 184

Heilker, W. J. Vibration in Nuclear Heat Exchangers Due to Liquid and Two-Phase Flow (80-C2/NE-4) P 358

Heiple, K. G. Structural Properties of Immature Canine Bone BE 232

Helical Springs
Design Nomographs of Compression Helical Springs for Predetermined Reliability Levels (80-C2/DET-85) MD 268

Helical Winding
Some Problems in Winding Geometry I 418

Helically Coiled Tubes
Critical Heat Flux in Helically Coiled Tubes HT 660

Helicoidal Flow
Drag Reducing Polymer in Helicoidal Flow F 491

Heliostats
Heliostat Characterization at the Central Receiver Test Facility SE 82

Helium
Creep Rupture Behavior of Selected Turbine Materials in Air, Ultra-High Purity Helium, and Simulated Closed Cycle Brayton Helium Working Fluids (80-GT-173) P 331
The Influence of Recent Heat Transfer Data on Gas Mixtures (He-Ar, H_2-CO_2) on Closed Cycle Gas Turbines (80-GT-89) P 114

Helium Penetration
Helium Penetration in Evacuated Solar Collectors: Theory and Effect on Their Performance (TB) SE 175

Helixform Gears
Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform— Part 1. Calculations For Machine Setings For Member Gear Manufacture of the Formate and Helixform Hypoid Gears (80-C2/DET-31) MD 83

Heller, R. A. *(editor)* Thermal Stresses in Severe Environments (BR) AM 453

Hemami, H. Modeling of Nonholonomic Dynamic Systems With Applications (81-APM-12) AM 177

Hemispherical Headforms
A Possible Criterion for Cavitation Inception on Hemispherical Headforms F 577

Hemispherical Noses
Observations of the Various Types of Limited Cavitation on Axisymmetric Bodies F 415

Hemodialysis
A One-Dimensional Model of Simultaneous Hemodialysis and Ultrafiltration With Highly Permeable Membranes BE 261

Hemodynamic Measurements
Correlation of Human Arterial Morphology With Hemodynamic Measurements in Arterial Casts BE 204

Hemodynamics
Hemodynamics and the Arterial Wall: An Introduction BE 171

Hemolytic Potential
On the Hemolytic and Thrombogenic Potential of Occluder Prosthetic Heart Valves From In-Vitro Measurements BE 83

Hendricks, S. L. Instability of a Damped Rotor Partially Filled With an Inviscid Liquid (BN) AM 674

Hengel, M. F. Train Brake and Track Capacity Requirements for the '80s (81-RT-11) I 392

Henry, R. E. Bubble Growth During Decompression of a Liquid (79-HT-73) HT 58

Hepatic Bile Ducts
Application of Hydroelastic Waves to the Removal of Small Gallstones BE 79

Herkes, W. H. Experimental Measurements of the Flow-Induced Shear Stress Distribution in the Vicinity of Prosthetic Heart Valves BE 267

Herman, H. On the Analysis of Uniform Prismatic Columns (80-C2/DET-113) MD 274

Herrick, B. M. A Proportional Piezoelectric Electro-Fluidic Pneumatic Valve Design DS 361

Herrmann, A. G. On Energy-Release Rates for a Plane Crack (81-WA/APM-3) AM 525

Herrmann, G. Dynamic Behavior of Continuous Cantilevered Pipes Conveying Fluid Near Critical Velocities (81-WA/APM-13) AM 643; On Energy-Release Rates for a Plane Crack (81-WA/APM-3) AM 525; Nondestructive Evaluation of the *J* and *M* Integrals (81-APM-2) AM 83

Hertzian Contacts
Simulation of Hertzian Contacts Found in Spur Gears with a High Performance Disk Machine MD 204

Heterogeneous Nucleation Theory
Prediction of Transient Inception of Boiling in Terms of a Heterogeneous Nucleation Theory (80-HT-113) HT 69

Hewko, L. O. Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) MD 410; (D) MD 417; (AC) MD 420

Hex-Cans
Structural Confinement and Safety Design of a Fast Reactor Core (80-C2/DET-112) MD 289

Hexagonal Cylinders
Vibrations of Square and Hexagonal Cylinders in a Liquid PVT 233

Heydt, G. T. A Detailed Transient Model of an OTEC Evaporator P 539

Hibbeler, R. C. Free Vibration of a Beam Supported by Unsymmetrical Spring Hinges (Er) AM 449

Hickox, C. E. A Numerical Study of Natural Convection in a Horizontal Porous Layer Subjected to an End-to-End Temperature Difference HT 797; Thermal Convection at Low Rayleigh Number from Concentrated Sources in Porous Media (Er) HT 527

High Gas Pressure
The Wear of a Chromium Carbide Hard Facing: The Effect of High Gas Pressure on Wear Transitions (80-C2/Lub-5) L 228

High Performance
Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) MD 410; (D) MD 417; (AC) MD 420

High Polymers
Friction Reduction in Turbulent Journal Bearings by High Polymers (D) L 317

High Pressure Conditions
Airblast Atomization of Alternative Liquid Petroleum Fuels under High Pressure Conditions P 514

High-Pressure Vessels
Thoughts on a Code of Practice for Forged High-Pressure Vessels of Monobloc Design PVT 2

High Speed Bearings
Design of Efficient Turbulent Thrust Bearings III. Self-Pressurized Design L 459
High Speed Testing of the Hollow Roller Bearing (80-C2/Lub-6) L 1

High Speed Couplings
Friction Between High Speed Gear Coupling Teeth MD 54; (D) MD 60; (AC) MD 60

High-Speed Machinery
Optimum Balancing of Combined Pitching and Yawing Moments in High-Speed Machinery (80-DET-7) MD 571
Variational Formulations for the Finite Element Analysis of Noise Radiation from High-Speed Machinery I 385

High Speed Mechanisms
Stress Fluctuation in High Speed Mechanisms (80-DET-21) MD 736

High-Speed Operation
Optimization of High Speed Geneva Mechanisms (80-DET-56) MD 621

High-Speed Roller Bearings
Calculated and Experimental Data for a 118-mm Bore Roller Bearing to 3 Million DN (80-C2/Lub-14) L 274; (D) L 281; (AC) L 283

High Strength Low Alloy Steels
Strong Tough HSLA Steels Via Processing and Heat Treating of Cu-Ni-Cb and Cu-Ti-B Compositions MT 207

High Strength Steels
A Criterion for Plastic Failure of Notched High Strength Steel Structures MT 142

Higher Frequency Modes
Computation of Seismic Response from Higher Frequency Modes (80-C2/PVP-50) PVT 16

Hijikata, K. Optimized Performance of Condensers with Outside Condensing Surfaces HT 96

Hilton, P. D. Three-Dimensional Finite Element Analysis of Elastic-Plastic Crack Problems (80-C2/PVP-36) PVT 214

Himmelblau, D. M A Stochastic Analysis of a Solar

Heated and Cooled House SE 158
Hirano, F. Effect of Asperity Interaction on Pitting in Rollers and Gears (80-C2/DET-38) MD 482; Effect of Molecular Weight Distributions of Mineral Oil on Tribofailure of Spur Gears MD 210
Hirao, M. Acoustoelastic Effect of Rayleigh Surface Wave in Isotropic Material AM 119; Acoustoelastic Effect of Thickness Oscillations (BN) AM 966
Hirasawa, S. Optimized Performance of Condensers with Outside Condensing Surfaces HT 96
Hirsch, C. Investigations of an Axial Compressor End-Wall Boundary Layer Prediction Method (80-GT 53) P 20
Hirsch, Ch. Finite Element Methods for Transonic Blade-to-Blade Calculation in Turbomachines (81-GT-5) P 665
Hirsch, R. A. Education Committee Overview (Ed) MD 673
Hirt, C. W. A Computational Method for Free Surface Hydrodynamics PVT 136
Hishinuma, Y. NO_x Removal Process by Injection of NH_3 and H_2O_2 in Gas Turbine Exhaust Gas P 589
Hitomi, K. *(author)* Manufacturing Systems Engineering (BR) DS 423; Optimization Analysis of Automated Assembly Systems (80-WA/Prod-20) I 224; Optimum Process Design for a Single-Stage Multifunctional Production System (80-WA/Prod-19) I 218
Hixson, E. L. Analytical Modeling of Wave Interference Directional Microphones (80-WA/NC-6) I 361
Hobbing
Table Sliding Taper Hobbing of Conical Gear Using Cylindrical Hob. Part 1: Theoretical Analysis of Table Sliding Taper Hobbing I 446; Part 2: Hobbing of Conical Involute Gear I 452
Hoch, J. Two-Dimensional Turbulent Offset Jet-Boundary Interaction F 154
Hodograph Transformations
The Study of Sluice Gate and Sharp-Crested Weir Through Hodograph Transformations (81-APM-23) AM 229
Hoeppner, D. W. A Statistical Investigation of Microstructure and Crack Growth in Titanium Alloys (80-GT-125) P 180; A Statistically Based Investigation of the Environmental and Cyclic Stress Effects on Fretting Fatigue MT 218
Hoeprich, M. R. Line Contact Deformation: A Cylinder Between Two Flat Plates (80-C2/Lub-50) L 21
Hoerner, C. C. Development of Affinity Relations for Modeling Characteristics of Check Valves (80-Pet-36) ERT 196
Hoff, N. J. Stress Concentrations in Cylindrically Orthotropic Composite Plates With a Circular Hole AM 563
Hoffman, M. A. Liquid Sheet Jet Experiments: Comparison With Linear Theory F 595; (D) F 603; (AC) F 804
Hoffmann, J. A. Effects of Free-Stream Turbulence on Diffuser Performance (81-FE-4) F 385
Hoheisel, H. The Combined Effect of Axial Velocity Density Ratio and Aspect Ratio on Compressor Cascade Performance (80-GT-138) P 247
Hold Periods
An Explanation for the Effects of Hold Periods on the Elevated Temperature Fatigue Behavior of 2 1/4 Cr-1 Mo Steel MT 7
Hole Shapes
Optimization in a Class of Hole Shapes in Plate Structures AM 905
Holes
Crack Arrest Modes of a Transverse Crack Going Through a Longitudinal Crack or a Hole MT 177
On-Line Hole Quality Evaluation for Drilling Composite Material Using Dynamic Data (80-WA/PROD-16) I 119
Holko, K. H. Creep Rupture Bending Test of 20 Percent Cold-Prestrained Ni-Fe-Cr Alloy Straight Tubes at 1100 F (593C) (80-C2/PVP-18) PVT 337
Holl, J. W. Correlations of Thermodynamic Effects for Developed Cavitation F 534; A Note on the Effect of Short and Long Laminar Separation Bubbles on Desinent Cavitation F 28; Observations of the Various Types of Limited Cavitation on Axisymmetric Bodies F 415; Scale Effects on Various Types of Limited Cavitation F 405; (D) (AC) F 414
Hollands, K. G. T. Optimization of Flow Passage Geometry for Air-Heating, Plate-Type Solar Collectors SE 323
Hollow Cylinders
Finite Elastic-Plastic Deformation of a Rotating Hollow Cylinder (BN) AM 666
Hollow Roller Bearings
The Rotational Accuracy Characteristics of the Preloaded Hollow Roller Bearing (80-C2/Lub-23) L 6
Hollow Rollers
High Speed Testing of the Hollow Roller Bearing (80-C2/Lub-6) L 1
Holmes, A. T. Boundary Layer Studies on Highly Loaded Cascades using Heated Thin Films and a Traversing Probe (80-GT-137) P 237
Holmes, K. R. Pulse-Decay Method for Measuring the Thermal Conductivity of Living Tissues BE 253
Holmes, P. J. *(editor)* New Approachs to Nonlinear Problems in Dynamics (BR) AM 453
Holography
A Comparison of Two Optical Techniques for measuring Cavitation Nuclei F 8
Interferometric Measurements in a Turbine Cascade Using Image-Plane Holography (80-GT-91) P 124
Interferometry by Holography (BR) AM 450
Holowenko, A. R. Closure Equations for a Six-Link Coupler-Drive Mechanism MD 236
Holýyen, S. Circular Saw Vibration Control by Induction of Thermal Membrane Stresses (80-WA/PROD-8) I 81
Holter, R. G. Long-Distance, High-Volume Transport of Coal by Slurry Pipeline (80-WRK/Pet-1) ERT 322
Holthuis, J. T. Flow Stresses of Prestrained Annealed OFHC Copper and SAE 1018 Steel MT 188
Holtz, M. J. A Comparison of Thermal Performance of Two and Four Tube Pass Designs for Split Flow Shells HT 169
Holz, P. P. Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) PVT 85
Hommert, P. J. Model Capabilities for In-Situ Oil Shale Recovery ERT 138
Homogeneous Nucleation
Homogeneous Nucleation and the Spinodal Line HT 61
Hoogendoorn, C. J. Flow Structure with Natural Convection in Inclinded Air-Filled Enclosures HT 535
Hopper Cars
Experimental Investigation of Freight Car Lateral Dynamics DS 201
Horak, D. A Comparison of the Stability and Curving Performance of Radial and Conventional Rail Vehicle Trucks DS 191; Stability and Curving Mechanics of Rail Vehicles (80-WA/DSC-15) DS 181
Hori, A Outline of Plan for Advanced Reheat Gas Turbine (81-GT-28) P 772
Hori, K. Acoustoelastic Effect of Rayleigh Surface Wave in Isotropic Material AM 119
Hori, Y. Design and Performance of Compliant Thrust Bearings With Spiral-Groove Membranes on Resilient Supports (80-C2/Lub-36) L 373; (D) L 385, 386; (AC) L 386; Rubber Surface Squeeze Film (80-C2/Lub-33) L 398; (D) (AC) L 404
Horizontal Cylinders
Effect of Vertical Separation Distance and Cylinder-to Cylinder Temperature Imbalance on Natural Convection for a Pair of Horizontal Cylinders HT 636
On the Irrotational Flow Around a Horizontal Cylinder in Waves (81-WA/APM-18) AM 689
Natural Convection Heat Transfer Coefficients for a Short Horizontal Cylinder Attached to a Vertical Plate HT 630
Horizontal Ducts
Natural Convection in Horizontal Duct Connecting Two Fluid Reservoirs HT 108
Horizontal Flow
A Horizontal Flow Past a Partially Heated, Infinite Vertical Cylinder HT 546
Horizontal Porous Layers
A Numerical Study of Natural Convection in a Horizontal Porous Layer Subjected to an End-to-End Temperature Difference HT 797
Horizontal Storage Tanks
An Investigation of Thermal Stratification in Horizontal Storage Tanks SE 288
Horizontal Surfaces
An Algorithm for Calculating Monthly-Average Radiation on Inclinded Surfaces SE 29
Equilibrium of Heavy Elastic Cylindrical Shells AM 582
Horizontal Tubes
Refilling and Rewetting of a Hot Horizontal Tube. Part III: Application of a Two-Fluid Model to Analyze Rewetting HT 653
Tube Wall Temperatures of an Eccentrically Located Horizontal Tube within a Narrow Annulus with Tube Contact (TN) HT 186
Horlock, J. H. Foreign Report F 6
Horn, S. V. An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large Scale Turbine Blade Cascade (D) (AC) P 602
Hot Corrosion
The Control of Hot Corrosion in Marine Gas Turbines (80-GT-126) P 188
Low-Pressure Plasma-Spray Coatings for Hot-Corrosion Resistance (80-GT-98) P 146
Hot Water
Correlation of Pressure Undershoot During Hot-Water Depressurization HT 52
Hough, G. R. *(editor)* Viscous Flow Drag Reduction (BR) F 485
Hoult, D. P. Soot Formation in a Turbulent Swirl Stabilized Laboratory Combustor (80-GT-77) P 49
Houpert, L. Rheological and Thermal Effects in Lubricated E. H. D. Contacts L 526
Housner, G. W. Earthquake Response of Deformable Liquid Storage Tanks (80-C2/PVP-79) AM 411
Howell, J. R. Analysis and Design of Efficient Absorbers for Low-Temperature Desiccant Air Conditioners SE 67; Analysis and Design of Hybrid Double-Absorption Cooling Systems for Low Grade Thermal Energy Applications (80-WA/HT-44) SE 331; *(reviewer)* Solar Energy Handbook (BR) SE 362; Solar Energy Programs for HP-41 and TI-59 Calculators (BR) SE 362
Howell, W. E. One Viewpoint Concerning Unit Size in the Development of Wind Turbines SE 306
Hoyt, J. W. A Photographic Study of Cavitation in Jet Flow F 14
Hrovat, D. About Bilinear Systems and This Issue (F) DS 75; Optimum Vehicle Suspensions Minimizing RMS Rattlespace, Sprung-Mass Acceleration and Jerk (81-WA/DSC-23) DS 228; (Er) DS 351; A Ten-Year Retrospective On This Journal (F) DS 1
Hsia, L. M. On the Principle of Transference in Three-Dimensional Kinematics (80-DET-88) MD 652; Stress Fluctuation in High Speed Mechansims (80-DET-21) MD 736
Hsieh, B. J. Transient Cavitation in Fluid-Structure Interactions (80-C2/PVP-23) PVT 345
Hsieh, C. K. A Methodology of Predicting Cavity Geometry Based on the Scanned Surface Temperature Data—Prescribed Heat Flux at the Cavity Side (79-WA/HT-45) HT 42
Hsu, C. F. Analytically Determined Fin-Tip Heat Transfer Coefficients HT 18; A Closed-Form Analytical Solution for Freezing Adjacent to a Plane Wall Cooled by Forced Convection (TN) HT 596
Hsu, C. S. A Generalized Theory of Cell-to-Cell Mapping for Nonlinear Dynamical Systems (81-WA/APM-25) AM 634; On the Inverse of a Special Class of Bilinear Systems (TB) DS 103; *(reviewer)* Nonlinear Oscillations (BR) AM 988; A Note of Special Thanks; Reviewers AM 457
Hsu, P. Cavitation Inception Tests on Axisymmetric Headforms F 268
Hsu, T. R. On the Prediction of Fusion Rate of Ice by Finite Element Analysis HT 727
Hsue, E. An Experimental Investigation of the Effect of Lubricant Properties on Temperature and Wear in Sliding Concentrated Contacts (80-C2/Lub-10) L 261

Hu, C. K. Pulse Propagation in Fluid-Filled Elastic Curved Tubes **PVT 43**
Huang, N. C. Mechanics of Ice-Lifting From a Flat Surface Through Penetration With a Sharp Blade (81-WA/APM-27) **AM 936**
Huang, T. T. Cavitation Inception Observations on Six Axisymmetric Headforms **F 273**; (D) (AC) **F 279**
Huang, W. C. Duluth Co-Disposal Facility **ERT 262**
Hubbard, M. Optimum Vehicle Suspensions Minimizing RMS Rattlespace, Sprung-Mass Acceleration and Jerk (81-WA/DSC-23) **DS 228**; (Er) **DS 351**
Huber, P. W. A Perturbation Analysis of Fluid-Structure Interactions in a Model Test System **AM 7**; Piping Response to Steam Generated Water Hammer **PVT 219**; On the Radial Oscillations of Multiple Gas Bubbles in an Incompressible Liquid **AM 727**
Hudak, S. J., Jr. Small Crack Behavior and the Prediction of Fatigue Life **MT 26**
Hugenbruch, E. R. Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) **MD 127**; (D) **MD 132**; (AC) **MD 133**
Hughes, T. J. R. Finite Elements Based Upon Mindlin Plate Theory With Particular Reference to the Four-Node Bilinear Isoparametric Element **AM 587**; Finite-Element Solution of Elastic-Plastic Boundary-Value Problems (81-APM-17) **AM 69**
Hui, D. Mode Interaction of Axially Stiffened Cylindrical Shells: Effects of Stringer Axial Stiffness, Torsional Rigidity, and Eccentricity (81-WA/APM-28) **AM 915**
Hull, M. L. Design an Actively Controlled Snow Ski Release Binding **BE 138**; Design of Aluminum Bicycle Frames **MD 901**
Hulstrom, R. L. Review, Evaluation, and Improvement of Direct Irradiance Models **SE 182**
Human Cortical Bone
Micromechanical Oscillators and Techniques for Determining the Dynamic Moduli of Microsamples of Human Cortical Bone at Microstrains **BE 146**
Humphrey, J. A. C. The Numerical Prediction of Developing Turbulent Flow in Rectangular Ducts **F 445**; (D) **F 454**; (AC) **F 455**; Tilting, Stretching, Pairing and Collapse of Vortex Structures in Confined Counter-Current Flow (80-WA/FE-11) **F 466**
Hung, T. K. Biomechanical and Neurological Response of the Spinal Cord of a Puppy to Uniaxial Tension (Er) **BE 279**
Hung, W. S. Y. Preliminary Design Analysis of a Catalytic Ceramic Structure in a Turbine Combustor (78-WA/GT-10) **P 338**
Hunt, K. H. A Classification of Coupler-Line Envelopes from Hinged Four-Bar Linkages (80-DET-42) **MD 750**; Equations for Four-Bar Line-Envelopes (80-DET-40) **MD 743**; (D) (AC) **MD 749**
Hunter, L. W. Transient Thermal Expansion of Solids During Inert Heating, Phase Change, and Surface Gasification (TN) **HT 801**
Hunting Gear Ratio
Effects of Hunting Gear Ratio Upon Surface Durability of Gear Teeth (80-C2/DET-35) **MD 227**
Hunting Performance
Experimental Investigation of Freight Car Lateral Dynamics **DS 201**
Hurwitz, W. M. Piping Response to Steam Generated Water Hammer **PVT 219**
Hurwitz Polynomials
Stable Linear Systems Simplification Via Padé Approximation to Hurwitz Polynomials **DS 279**
Huseyin, K. On the Stability of Equilibrium Paths Associated With Autonomous Systems (81-APM-9) **AM 183**
Hussain, A. K. M. F. Search for Large-Scale Coherent Structures in the Nearly Self-Preserving Region of a Turbulent Axisymmetric Jet **F 503**
Hussain, M. A. Residual Stress Redistribution Caused by Notches and Cracks in a Partially Autofretted Tube (81-PVP-6) **PVT 302**
Huston, R. L. Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) **MD 127**; A Method of Local Synthesis of Gears Grounded on the Connections Between the Principal and Geodetic Curvatures of Surfaces (80-C2/DET-30) **MD 114**; (D) **MD 124**; Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform"—Part 1. Calculations for Machine Settings for Member Gear Manufacture of the Formate and Helixform Hypoid Gears (80-C2/DET-31) **MD 83**; Part 2. Machine Setting Calculations for the Pinions of Formate and Helixform Gears **MD 89**; Part 3. Analysis and Optimal Synthesis Methods for Mismatch Gearing and it's Application For Hypoid Gears of "Formate" and "Helixform" (80-C2/DET-33) **MD 102**; (D) **MD 110**; (AC) **MD 112**
Hutchins, G. M. Correlation of Human Arterial Morphology With Hemodynamic Measurements in Arterial Casts **BE 204**
Hutchinson, J. R. Transverse Vibrations of Beams, Exact Versus Approximate Solutions **AM 923**
Hutchinson, J. W. The Penny-Shaped Crack and the Plane Strain Crack in a Infin"e Body of Power-Law Material **AM 830**
Hybrid Absorption Systems
Analysis and Design of Hybrid Double-Absorption Cooling Systems for Low Grade Thermal Energy Applications (80-WA/HT-44) **SE 331**
Hybrid Bearings
Fluid-Film Journal Bearings Operating in a Hybrid Mode: Part I—Theoretical Analysis and Design **L 558**; Part II—Experimental Investigation **L 566**
Hybrid Numerical Method
A Hybrid Numerical Method for Homogeneous Equilibrium Two-Phase Flows in One Space Dimension (80-C2/PVP-51) **PVT 20**
Hybrid Position
Hybrid Position/Force Control of Manipulators **DS 126**
Hydraulic Cylinders
Finite Element Analysis of Hydraulic Cylinders (80-DE-3) **MD 239**
Hydraulic Fracturing
Packer-Induced Stresses During Hydraulic Well Fracturing **ERT 336**
Hydraulic Machines
The Third Two-Dimensional Problem of Three-Dimensional Blade Systems of Hydraulic Machines—Part 1: Theoretical Analysis **F 33**; Part 2: Analytical Results **F 42**; (D) **F 483**
Hydraulic Servovalves
A Fluidic Hydraulic Servovalve **DS 331**
Hydraulic Transients
Pressure Transient Analysis of Elbow-Pipe Experiments Using the PTA-2 Computer Code (80-C2/PVP-22) **PVT 33**
Hydraulics
Analysis, Synthesis and Design of Hydraulic Servosystems and Pipelines (BR) **DS 73**
Hydrodynamic Aspects
Hydrodynamic Aspects of Fatigue in Plain Journal Bearings (80-C2/Lub-19) **L 150**
Hydrodynamic Coefficients
Analysis of Motions of a Catamaran in Arbitrary Heading Waves **ERT 219**
Hydrodynamic Damping
Added Mass and Hydrodynamic Damping of Perforated Plates Vibrating in Water **PVT 175**
Hydrodynamic Forces
Nonlinear Transient Motion of Deep Ocean Mining Pipe **ERT 2**
Hydrodynamic Lubrication
Hydrodynamic Lubrication in Wavy Contacting Face Seals—A Two Dimensional Model (80-C2/Lub-10) **L 578**; (D) (AC) **L 586**
On the Thrust Bearing Characteristics in Turbulent Flow **L 453**
Hydrodynamic Thrust Bearings
Analysis of a Hydrodynamic Thrust Bearing With Incomplete Film (80-C2/Lub-27) **L 355**; (D) **L 359, 360**; (AC) **L 360**
Hydrodynamic Transients
A Perturbation Analysis of Fluid-Structure Interactions in a Model Test System **AM 7**
Hydrodynamics
A Computational Method for Free Surface Hydrodynamics **PVT 136**
Hydroelastic Waves
Application of Hydroelastic Waves to the Removal of Small Gallstones **BE 79**
Hydroelectric Power
Small and Micro Hydroelectric Plants (BR) **F 484**
Hydrofoils
Scale Effects on Various Types of Limited Cavitation **F 405**; (D) (AC) **F 414**
Hydrogen Bubbles
The Effect of Nuclei on the Inception of Bubble and Sheet Cavitation on Axisymmetric Bodies **F 557**
Hydromagnetic Flow
Unsteady Hydromagnetic Flow Near a Moving Porous Plate **AM 255**
Hydropower
Small and Micro Hydroelectric Plants (BR) **F 484**
Hydrostatics
Hydrostatic Power Splitting Transmissions Design and Application Examples (80-GT-123) **P 168**
Hypoid Gears
Elastohydrodynamic Lubrication of Hypoid Gears (80-C2/DET-47) **MD 195**
A Method of Local Synthesis of Gears Grounded on the Connections Between the Principal and Geodetic Curvatures of Surfaces (80-C2/DET-30) **MD 114**; (D) **MD 122**
Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform"—Part 1. Calculations For Machine Settings For Member Gear Manufacture of the Formate and Helixform Hypoid Gears (80-C2/DET-31) **MD 83**

I

Ibrahim, R. A. Cavitation in a Short Bearing With Pressurized Lubricant Supply (80-C2/Lub-47) **L 337**; (D) **L 346**; (AC) **L 347**
Ice
Experimental Study on Moving Loads on a Floating Sea Ice Road **ERT 96**
On the Prediction of Fusion Rate of Ice by Finite Element Analysis **HT 727**
Ice Formation
An Experimental Investigation of Ice Formation around an Isothermally Cooled Cylinder in Crossflow **HT 733**
Ice Growth
A Simple Model of Seasonal Sea Ice Growth (80-WA/HT-20) **ERT 212**
Ice-Lifting
Mechanics of Ice-Lifting From a Flat Surface Through Penetration With a Sharp Blade (81-WA/APM-27) **AM 936**
Ice Pressure Sensor
Analysis for an Embedded Ice Pressure Sensor **ERT 87**
Ice Sheet
Ice Pressure Sensor Inclusion Factors **ERT 82**
Ice Wall
Melting of a Vertical Ice Wall by Free Convection into Fresh Water **HT 13**
Ichimaru, K. Effect of Asperity Interaction on Pitting in Rollers and Gears (80-C2/DET-36) **MD 482**; Effect of Molecular Weight Distribution of Mineral Oil on Tribofailure of Spur Gears **MD 210**
"Ideal" Gear Tooth
Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) **MD 127**; (D) **MD 132**; (AC) **MD 133**
Ideal Rubber Membranes
On Thermodynamics and Kinetic Theory of Ideal Rubber Membranes **AM 345**
Identification Algorithm
Application of Model Reference Adaptive Techniques to a Class of Nonlinear Systems **DS 158**
Ido, M. Stochastic and Fuzzy Decision Problems in Three-Workpiece Lapping Process **I 192**
Igarashi, A. A Damage Accumulation Model for Fatigue Crack Propagation **MT 293**
Ihara, C. A Damage Accumulation Model for Fatigue Crack Propagation **MT 293**
Im, K. Two-Dimensional Performance Analysis and Design of MHD Channels **F 307**
Imam, I. A New Solution to Coulomb Friction in Mechanism Bearings: Theory and Application (80-DET-52) **MT 764**
Imber, M. Thermally Symmetric Nonlinear Heat Transfer in Solids **HT 745**
Immature Bone
Structural Properties of Immature Canine Bone **BE 232**

Immediate Settlement
Model Studies on Immediate Settlement Behavior of Submarine Pipelines **ERT 254**
Immune Response
On the Inverse of a Special Class of Bilinear Systems (TB) **DS 103**
Impact
The Role of Elastic Tangential Compliance in Oblique Impact (80-C2/Lub-22) **L 74**
Impact Load
Transient Response of a Finite Crack in a Half Plane Under Impact Load **AM 534**
Impact Studies
Superhybrid Composite Blade Impact Studies (81-GT-24) **P 731**
Impacting
Moments Between Impacting Rigid Bodies **MD 812**
Impedance Method
Mobility and Impedance Definitions for Plain Journal Bearings (TB) **L 468**
Impellers
A Blockage Model for Centrifugal Compressor Impellers (81-GT-11) **P 698**
On the Pressure Losses Due to the Tip Clearance of Centrifugal Blowers (80-GT-139) **P 271**
A Study on Centrifugal Impeller and Diffuser Flow (81-GT-9) **P 688**
The Third Two-Dimensional Problem of Three-Dimensional Blade Systems of Hydraulic Machines—Part 1: Theoretical Analysis **F 33**; Part 2: Analytical Results **F 42**
Imperfect Structures
On the Error That Can Be Induced by an Ergodicity Assumption (BN) **AM 654**
Imperfection Sensitivity
On the Buckling Design of Spherical Shells (81-PVP-32) **PVT 261**
Impurities
Effect of Sodium, Potassium, Magnesium, Calcium, and Chlorine on the High Temperature Corrosion of In-100, U-700, IN-792, and MAR M-509 (80-GT-150) **P 294**
Inaba, H. An Experimental Investigation of Ice Formation around an Isothermally Cooled Cylinder in Crossflow **HT 733**
Inception
Cavitation Inception Observations on Six Axisymmetric Headforms **F 273**; (D) (AC) **F 279**
Inception of Cavitation From a Backward Facing Step **F 288**
Viscous Effects in the Inception of Cavitation **F 280**
Inclined Enclosures
Flow Structure with Natural Convection in Inclined Air-Filled Enclosures **HT 535**
Inclined Pipes
Experimental Study of Oil-Water Flow in Inclined Pipes (80-Pet-51) **ERT 56**
Inclined Surfaces
An Algorithm for Calculating Monthly-Average Radiation on Inclined Surfaces **SE 29**
Inclusion
Large Plane-to-Surface Deformations of Membranes With Inclusion **AM 357**
Inclusion Factor
Ice Pressure Sensor Inclusion Factors **ERT 82**
Incomplete Film
Analysis of a Hydrodynamic Thrust Bearing With Incomplete Film (80-C2/Lub-27) **L 355**; (D) **L 359, 360**; (AC) **L 360**
Incompressibility
Rubber Surface Squeeze Film (80-C2/Lub-33) **L 398**; (D) (AC) **L 404**
Incompressible Flow
Reexamination of Stability of a Two-Dimensional Finite Panel Exposed to an Incompressible Flow **AM 472**
Incompressible Fluid
A Prediction Method for Planar Diffuser Flows (81-FE-5) **F 315**
Incompressible Liquids
On the Radial Oscillations of Multiple Gas Bubbles in an Incompressible Liquid **AM 727**
Incremental Method
Amplitude Incremental Variational Principle for Nonlinear Vibration of Elastic Systems (81-WA/APM-26) **AM 959**
Incropera, F. P. Mixed Convection Heat Transfer from Horizontal Cylinders in the Crossflow of a Finite Water Layer **HT 540**; Mixed Layer Development in a Double-Diffusive, Thermohaline System **SE 351**
Indenters
A Critical Appraisal of Static Hardness Measurements **AM 798**
Indirect Injection
A Correlation for Air Velocities in Cylindrical Prechambers of Diesel Engines **P 499**
Induction Heating
A Computational Model for Improving Weld Residual Stresses in Small Diameter Pipes by Induction Heating (80-C2/PVP-152) **PVT 294**
Industrial Manipulators
One Engineering Concept of Dynamic Control of Manipulators **DS 108**
Industrial Robots
Dynamic Continuous Path Synthesis of Industrial Robots Using ADAMS Computer Program (80-DET-41) **MD 602**
Industry
On the Acoustical Implications of Vortex Shedding from an Exhaust Pipe (80-WA/NC-16) **I 378**
Adaptive Control Optimization of Grinding (80-WA/PROD-12) **I 103**; (D) **I 352**; (AC) **I 353**
Analytical Modeling of Wave Interference Directional Microphones (80-WA/NC-6) **I 361**
Behavior of Self-Excited Chatter Due to Multiple Regenerative Effect **I 324**
On Circular Pipe Wall Vibratory Response Excited by Internal Acoustic Fields (80-WA/NC-13) **I 372**
Circular Saw Vibration Control by Induction of Thermal Membrane Stresses (80-WA/PROD-8) **I 81**
Continuous Miner Noise (80-WA/NC-4) **I 282**
Cyclic Behavior of Class U Wheel Steel (80-WA/RT-9) **I 113**
A Data Dependent Systems Approach to Dynamics of Surface Generation in Turning **I 437**
A Deep Drawing Test for Determining the Punch Coefficient of Friction (80-WA/Prod-10) **I 197**
Determination of Balloon Surface in Textile Machines—A Finite Segment Approach **I 424**
The Development and Testing of the Space Shuttle Reaction Control Systems (78-WA/Aero-20) **I 137**
Drop-Size Distributions of Newtonian and Bingham Liquid Sprays Produced by Fan-Jet Pressure Nozzles With and Without the Preorifice (81-PID-3) **I 402**
Dynamic Analysis of Milling Machine by Torque Signals **I 235**
A Finite Element Method for the Elastic Contact Problems **I 456**
Foreign Report **F 6**
Functional Assessment of the Grinding Wheel Surface Characteristics by Turbulence Amplifier **I 99**
The Grinding of Workpiece Materials Exhibiting High Adhesion—Part 2: Forces **I 156**
The Grinding of Workpieces Exhibiting High Adhesion—Part I: Mechanisms **I 144**
The Hammer QSD-Quick Stop Device for High Speed Machining and Rubbing (80-WA/PROD-13) **I 13**
In-Process Measurement of Surface Roughness in Turning by Laser Beams (80-WA/Prod-17) **I 203**
An Investigation of the Mechanics and Noise Associated with Coal Cutting (80-WA/NC-1) **I 257**
Laboratory Investigation of Wheel Rail Contact Stresses for U.S. Freight Cars (80-WA/RT-8) **I 248**
Locally and Nonlocally Reacting Flexible Porous Layers; A Comparison of Acoustical Properties (80-WA/NC-14) **I 302**
On the Mechanics of Chip Segmentation in Machining (80-WA/PROD-3) **I 33**
A Method to Measure Contact Pressure Between Metallic Surfaces by Changes in Surface Roughness (80-WA/Prod-18) **I 210**
A Note on the Solution for Continuous Jet Penetration of Solids (TB) **I 349**
Numerical Techniques in Linear Duct Acoustics—A Status Report (80-WA/NC-2) **I 270**
On-Line Hole Quality Evaluation for Drilling Composite Material Using Dynamic Data (80-WA/PROD-16) **I 119**
On One Analysis of Piercing by the Use of Flow Lines (TB) **I 233**
Optimization Analysis of Automated Assembly Systems (80-WA/Prod-20) **I 224**
Optimization of Multipass Turning With Constraints **I 462**
Optimum Process Design for a Single-Stage Multifunctional Production System (80-WA/Prod-19) **I 218**
Order Statistical Approach to Ground Surface Generation **I 23**
Oxygen Facilities for Synthetic Fuel Projects **I 409**
Passive Acoustic Detection of Gas Leaks in Buried Pipes (80-WA/NC-17) **I 314**
Point Admittance of Cylindrical Shells With and Without Ring-Stiffening (80-WA/NC-5) **I 293**
Polycarbonate Plastic Inserts for Spherical Acrylic Plastic Shells Under Hydrostatic Loading **I 90**
Quantitative Relationships for Acoustic Emission from Orthogonal Metal Cutting **I 330**
The Reduction of Capstan Effectiveness by Cable Bending Resistance (80-WA/OCE-2) **I 319**
Reference-Pulse Circular Interpolators for CNC Systems (80-WA/PROD-7) **I 131**
Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part I: Plain Milling With a Single-Toothed Helical Cutter (80-WA/Prod-4) **I 185**; Part II: Plain Milling With a Multi-Toothed Helical Cutter (80-WA/Prod-5) **I 174**
Ride Quality Analysis of Multi-Level Auto Rack Equipped Flat Cars (79-WA/RT-4) **I 241**
The Role of Microcracks in Large Plastic Deformation **I 431**
The Role of Wheel-Work Deflection in Grinding Operations (80-WA/PROD-11) **I 73**
On The Rowe-Spick Shear Angle Relations for Orthogonal Machining **I 79**
A Semi-Empirical Solution to Upset Forging **I 478**
Single Grit Simulation of the Abrasive Machining of Wood (80-WA/PROD-2) **I 1**
On Some Aspects of Surface Formation in ECM **I 341**
Some Investigations Into Machining With Driven Rotary Tools **I 469**
Some Problems in Winding Geometry **I 418**
Sound Transmission Through a Cylindrical Pipe Wall (80-WA/NC-3) **I 355**
Stochastic and Fuzzy Decision Problems in Three-Workpiece Lapping Process **I 192**
A Stochastic Tool-Life Model **I 126**
System Approach to the Thermal Behavior and Deformation of Machine Tool Structures in Response to the Effect of Fixed Joints (80-WA/PROD-14) **I 67**
Table Sliding Taper Hobbing of Conical Gear Using Cylindrical Hob. Part 1: Theoretical Analysis of Table Sliding Taper Hobbing **I 446**; Part 2: Hobbing of Conical Involute Gear **I 452**
Tooling Design for EMC—A Finite Element Approach (80-WA/Prod-9) **I 183**
Torque and Stress Balanced Design of Helically Armored Cables (80-WA/OCE-1) **I 61**
Train Brake and Track Capacity Requirements for the '80s (81-RT-11) **I 392**
Upper Bound Analysis of Axisymmetric, Closed-Die Forgings (80-WA/PROD-1) **I 109**
Variational Formulations for the Finite Element Analysis of Noise Radiation from High-Speed Machinery **I 385**
Industry/University Survey
Results of an Industry/University Survey of Machine Systems Design Education **MD 687**
Inelastic Analysis
Experience With Simplified Inelastic Analysis of Piping Designed for Elevated Temperature Services (80-C2/NE-15) **PVT 267**
Inelastic Dynamic Response of Rectangular Plates by Finite Elements (BN) **AM 441**
Inelastic Deformation
A State Variable Analysis of Inelastic Deformation of Thin Walled Tubes **MT 306**
Inertia
The Effect of Inertia on Flow Between Misaligned Rotating Disks (80-WA/FE-2) **F 82**
Inertia-Dominated Transition
Transient Fluid Flow in Porous Media: Inertia-Dominated to Viscous-Dominated Transition **F 339**

Inextensional Motion
Exact Equations for the Large Inextensional Motion of Elastic Plates **AM 109**
Infiltration
Infiltration of a Fluid Into a Dry Poro-Elastic Body **AM 259**
Infinite Acoustic Fluid
Calculation of the Response of an Impulsively Excited Oscillator in an Infinite Acoustic Fluid **AM 749**
Infinite Elastic Body
Stress Field Due to a Cylindrical Inclusion With Constant Axial Eigenstrain in an Infinite Elastic Body **AM 853**
Infinite Solid
An Embedded Elliptical Crack, in an Infinite Solid, Subject to Arbitrary Crack-Face Tractions **AM 88**
Inflatable Packers
Packer-Induced Stresses During Hydraulic Well Fracturing **ERT 336**
Inflight Impact
The Development of a Substitute Bird Model (81-GT-23) **P 725**
Infrared Spectroscopy
Temperature Gradients Through EHD Films and Molecular Alignment Evidenced By Infrared Spectroscopy (80-C2/Lub-12) **L 65**
Infra-red Technique
Contact Temperature in Dry Bearings. Three Dimensional Theory and Verification (80-C2/Lub-40) **L 243**; (D) (AC) **L 252**
Ingard, K. U. Locally and Nonlocally Reacting Flexible Porous Layers; A Comparison of Acoustical Properties (80-WA/NC-14) **I 302**
Ingham, D. B. The Effects of Nonuniform Heat Transfer from an Annular Fin of Triangular Profile (TN) **HT 184**
Initial Region
Initial Region of Subsonic Coaxial Jets of High Mean-Velocity Ratio **F 335**
Initial Stress
On the Stability of a Composite Beam With Initial Stress to Moving Loads (81-APM-25) **AM 388**
Inlet Conditions
REVIEW: Effects of Inlet Conditions on Conical-Diffuser Performance **F 250**
Inlet Flow
Optimum Street-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) **F 294**
Inlet Nozzles
An Investigation Into the Performance of Two Inlet Nozzles for Flow-Measurement **F 67**; (D) (AC) **F 73**
Inlet Velocity Gradient
Mean Flow Measurements Near the Plane of an Open Rotor Operating with an Inlet Velocity Gradient **P 445**
Inoue, A. Destabilization of Film Boiling Due to Arrival of Pressure Shock: Part I Experimental **HT 459**; Part II: Analytical **HT 465**
In-Phase Motion
Forces on Staggered Airfoil Cascades in Unsteady In-Phase Motion **F 299**
Inplane Compressive Forces
Buckling of Polar Orthotropic Annular Plates Under Uniform Inplane Compressive Forces (DDM) **AM 543**
In-Plane Loading
Quasi-Square Hole With Optimum Shape in an Infinite Plate Subjected to In-Plane Loading (80-WA/DE-3) **MD 566**
In-Process Measurement
In-Process Measurement of Surface Roughness in Turning by Laser Beams (80-WA/Prod-17) **I 203**
Instability
Advances in Labyrinth Seal Aeroelastic Instability Prediction and Prevention (80-GT-151) **P 308**
A Dynamic Absorber for Gear Systems Operating in Resonance and Instability Regions (80-C2/DET-7) **MD 384**
Factors Influencing Instability and Resonances in Geared Systems (80-C2/DET-8) **MD 372**
Flow Instability at the Inlet of a Centrifugal Compressor **P 451**
Instability of a Transversely Isotropic Elastic Slab Subjected to Axial Loads **AM 351**
Rotordynamic Instability in Centrifugal Compressors—Are All the Excitations Understood? (80-GT-149) **P 288**
The Stability of Pumping Systems—The 1980 Freeman Scholar Lecture **F 195**
Instantaneous Kinematics
Instantaneous Kinematics of Multiple-Degree-of-Freedom Motions (80-DET-53) **MD 608**
Instantaneous Pressure
Instantaneous Pressure Distribution Around a Sphere in Unsteady Flow **F 497**
Insulation
Phase Change Around Insulated Buried Pipes: Quasi-Steady Method **ERT 201**
The Role of Rear Insulation in the Performance of Flat Plate Solar Collectors **SE 282**
Intact Human Lumbar Spine
A Method of Analyzing the Three-Dimensional Stiffness Properties of the Intact Human Lumbar Spine (TB) **BE 299**
Integral Conservation
Fracture Mechanics (BR) **MT 77**
Integral Relations
Application of the Method of Integral Relations to the Calculation of Two-Dimensional Incompressible Turbulent Boundary Layer **AM 701**
Interactive Linkage Synthesis Programs
Implementation of Solution Rectification Techniques in an Interactive Linkage Synthesis Program (80-DET-91) **MD 657**
Interface
Unsteady Heat Flow between Solids with Partially Contacting Interface **HT 32**
Interface Cracks
On Branched, Interface Cracks (81-APM-20) **AM 529**
Interface Motion
Heat Transfer and Interface Motion During Melting and Solidification around a Finned Heat Source/Sink (80-HT-10) **HT 720**
Interfacial Bonds
Friction—The Present State of Our Understanding **L 169**
Interference Fits
Rotating Elasto-plastic Interference Fits (80-C2/DET-11) **MD 61**
Interferograms
Interferometric Measurements in a Turbine Cascade Using Image-Plane Holography (80-GT-91) **P 124**
Interferometric Measurements
An Experimental Evaluation of the Hamrock and Dowson Minimum Film Thickness Equation for Fully Flooded EHD Point Contacts (80-C2/Lub-38) **L 284**; (D) **L 294**
Interferometry
Interferometry by Holography (BR) **AM 450**
Internal Acoustic Fields
On Circular Pipe Wall Vibratory Response Excited by Internal Acoustic Fields (80-WA/NC-13) **I 372**
Internal Combustion Engine
Computation of the Turbulent Flow in an Internal Combustion Engine During Compression **F 75**
Internal Cylinders
A Finite Element Formulation for Fluid-Structure Interaction in Three-Dimensional Space **PVT 183**
Internal Pressure
Approximate Elastic Stresses in a Tee Branch Pipe Connection Under Internal Pressure (TB) **PVT 104**
Stress Analysis of O.D. Notched Thick-Walled Cylinders Subjected to Internal Pressure or Thermal Loads **PVT 76**
Internal Stresses
Analysis Method for Both Internal Stresses and Microstructural Effect Under Pure Rolling Fatigue Conditions **L 521**
International Technology Transfer
Design Technology Transfer Conference, review (CR) **MD 259**
International Technology Transfer—Who Should Learn the Second Language? (80-C2/DET-83) **MD 335**
Interpolating Polynomials
An Isoparametric Finite Element With Nodal Derivatives (81-APM-1) **AM 64**
Interpolators
Reference-Pulse Circular Interpolators for CNC Systems (80-WA/PROD-7) **I 131**
Interpolatory Schemes
Finite Elements Based Upon Mindlin Plate Theory With Particular Reference to the Four-Node Bilinear Isoparametric Element **AM 587**
Intersecting
Approximate Elastic-Plastic Analysis of Intersecting Equal Diameter Cylindrical Shells (TB) **PVT 111**
Intrinsic Formulation
On the Nonlinear Intrinsic Dynamics of Doubly Curved Shells (81-WA/APM-9) **AM 909**
Inverse Problems
Direct Approach to Aerodynamic Design Problems **AM 721**
Inverse Solution
Inverse Solution of Reynolds' Equation of Lubrication Under Point-Contact Elastohydrodynamic Conditions **L 539**
Inverse System Design
On the Inverse of a Special Class of Bilinear Systems (TB) **DS 103**
Inverting
Redesign of Structural Vibration Modes by Finite-Element Inverse Perturbation (80-GT-167) **P 319**
Inviscid Liquid
Instability of a Damped Rotor Partially Filled With an Inviscid Liquid (BN) **AM 674**
Inviscid-Viscous Interaction
Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (D) **P 603**; (AC) **P 603, 604**
Involute Gear Teeth
Rating Gear Strength (80-C2/DET-88) **MD 516**
Involute Gears
Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) **MD 127**; (D) **MD 132**; (AC) **MD 133**
Table Sliding Taper Hobbing of Conical Gear Using Cylindrical Hob Part 1: Theoretical Analysis of Table Sliding Taper Hobbing **I 446**; Part 2: Hobbing of Conical Involute Gear **I 452**
Involute Spur Gears
The Efficiency of Involute Spur Gears **MD 160**
Iron-Base Alloys
Abrasive Wear in Machining: Experiments With Materials of Controlled Microstructure **MT 151**
Irradiance
Review, Evaluation, and Improvement of Direct Irradiance Models **SE 182**
Irrotational Flow
On the Irrotational Flow Around a Horizontal Cylinder in Waves (81-WA/APM-18) **AM 689**
Irrotational Motion
The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-13) **F 119**; (D) (AC) **F 126**
Isentropic Flow
Historical Review of Real-Fluid Isentropic Flow Models (79-WA/FM-1) **F 258**
Ishibashi, A. Effects of Hunting Gear Ratio Upon Surface Durability of Gear Teeth (80-C2/DET-35) **MD 227**
Ishida, M. On the Pressure Losses Due to the Tip Clearance of Centrifugal Blowers (80-GT-139) **P 271**
Ishikawa, H. Effect of the External Load on the Thermoelastoplastic Creep Deformation (BN) **AM 429**; On One Analysis of Piercing by the Use of Flow Lines (TB) **I 233**
Ishimaru, H. An Investigation Into the Performance of Two Inlet Nozzles for Flow Measurement **F 67**; (D) (AC) **F 73**
Iskander, S. K. Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) **PVT 85**
Isoparametric Element
An Isoparametric Finite Element With Nodal Derivatives (81-APM-1) **AM 64**
Isothermal Body
On the Transient Convective Transport from a Body of Arbitrary Shape **HT 92**
Isothermal Conditions
The Isothermal Elastohydrodynamic Lubrication of Spheres **L 547**; (D) (AC) **L 557**
Isotropic Bearings
A Direct Integration Technique for the Transient Analysis of Rotating Shafts **MD 244**

Isotropic Elastic Host
Anlaysis for an Embedded Ice Pressure Sensor **ERT 87**
Isotropic Elastic Slab
Instability of a Transversely Isotropic Elastic Slab Subjected to Axial Loads **AM 351**
Isotropic Material
Acoustoelastic Effect of Rayleigh Surface Wave in Isotropic Material **AM 119**
Isoviscous Conditions
An Analytical Solution for the Thermal Characteristics of Journal Bearings **L 443**
Itinerant Evangelist
Entropy: A New World View (BR) **SE 178**
Ito, H. An Investigation Into the Performance of Two Inlet Nozzles for Flow Measurement **F 67**; (D) (AC) **F 73**
Itou, S. Transient Response of a Finite Crack in a Half Plane Under Impact Load **AM 534**
Iwaki, T. Residual Stresses of Czochralski-Grown Crystal **AM 866**
Iwan, W. D. On the Formulation of Strain-Space Plasticity With Multiple Loading Surfaces (81-WA/APM-20) **AM 773**; The Natural Frequencies and Mode Shapes of Cables With Attached Masses (81-Pet-10) **ERT 237**
Iyican, L. Natural Convection and Sidewall Losses in Trapezoidal Groove Collectors **SE 167**

J

***J*-Integral**
Nondestructive Evaluation of the *J* and *M* Integrals (81-APM-2) **AM 83**
Jackson, A. Rolling Bearing Life Modifying Factors for Film Thickness, Surface Roughness, and Friction (80-C2/Lub-16) **L 509**; (D) **L 516-518**; (AC) **L 519**; Some Limitations in Applying Classical EHD Film Thickness Formulas to a High-Speed Bearing (80-C2/Lub-13) **L 295**; (D) (AC) **L 303**
Jackson, M. S. A Phenomenological Model for Transient Deformation Based on State Variables **MT 314**
Jackson, R. J. Creep Relaxation of Fuel Pin Bending and Ovalling Stresses (80-C2/NE-24) **P 621**
Jacobs, H. R. Design and Evaluation of Evaporating Lens Direct Contact Heat Exchangers **ERT 128**; Heat Transfer to Oil Shale in a Closely Spaced Bundle as an Approximation to a Packed Bed (79-WA/HT-34) **ERT 307**; Oil Shale Retorting in a Bottom-Burning Retort (79-HT-3) **ERT 119**
Jacobsson, B. A Film Thickness Analysis for Line Contacts Under Pure Rolling Conditions With a Non-Newtonian Rheological Model (80-C2/Lub-26) **L 305**; (D) **L 313**; (AC) **L 314**
Jaffrin, M. Y. A One-Dimensional Model of Simultaneous Hemodialysis and Ultrafiltration With Highly Permeable Membranes **BE 261**
Jahanmir, S. Antiwear Mechanism of ZDDP in the Presence of Calcium Sulfonate Detergent **L 486**; (D) **L 494, 495**; (AC) **L 495**
Jain, A. A Sensitivity Study on Numerical Analysis of Dynamic Girth Crack Propagation (80-C2/PVP-107) **PVT 169**
Jain, R. K. Dynamic Response of a Double Articulated Offshore Loading Structure to Non-collinear Waves and Current (80-Pet-56) **ERT 41**
Jain, V. K. Tooling Design for ECM—A Finite Element Approach (80-WA/Prod-9) **I 183**
James, C. R. The Hammer QSD-Quick Stop Device for High Speed Machining and Rubbing (80-WA/PROD-13) **I 13**
James, D. D. Surface Contamination, Rejuvenation, and the Reproducibility of Results in Nucleate Pool Boiling **HT 453**
James, L. A. The Effect of Product Form Upon Fatigue-Crack Growth Behavior in Alloy 718 (81-Mat-1) **MT 234**
Janna, W. S. Drop-Size Distributions of Newtonian and Bingham Liquid Sprays Produced by Fan-Jet Pressure Nozzles With and Without the Preorifice (81-PID-3) **I 402**
Japikse, D. *(reviewer)* Turbomachines—A Guide to Design Selection and Theory (BR) **F 644**
Jasuja, A. K. Airblast Atomization of Alternative Liquid Petroleum Fuels under High Pressure Conditions **P 514**
Jawad, M. H. Evaluation of Thermal Conductivity in Layered Vessels (82-PVP-1) **PVT 307**
Jay, R. L. Wake Induced Time-Variant Aerodynamics Including Rotor-Stator Axial Spacing Effects **F 59**
Jeffcott Rotor
Influence of Acceleration on the Critrical Speed of a Jeffcott Rotor (80-GT-88) **P 108**
Jeffreson, C. P. Use of Lead/Lag Approximations in Modeling Thermal Regenerator Systems **DS 49**
Jendrzejczyk, J. A. Flow Velocity Dependence of Damping in Tube Arrays Subjected to Liquid Cross-Flow **PVT 130**
Jensen, M. K. Critical Heat Flux in Helically Coiled Tubes **HT 660**
Jerk
Optimum Vehicle Suspensions Minimizing RMS Rattlespace, Sprung-Mass Acceleration and Jerk (81-WA/DSC-23) **DS 228**
Jet-Boundary Interaction
Two-Dimensional Turbulent Offset Jet-Boundary Interaction **F 154**
Jet Engines
Blade Excitation by Elliptical Whirling in Viscous-Damped Jet Engines (80-GT-168) **P 326**
Thermal Expansion Accommodation in a Jet Engine Frame **P 776**
Jet Flow
A Photographic Study of Cavitation in Jet Flow **F 14**; (D) **F 370**; (AC) **F 371**
Jet Penetration
A Note on the Solution for Continuous Jet Penetration of Solids (TB) **I 349**
Jet Piercing
Jet Piercing of Oil Sands **ERT 330**
Jets
The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-13) **F 119**; (D) (AC) **F 126**
Dense, Vertical Jets with Two Opposing Buoyancy Components **HT 135**
Generation of Oscillating Jets **F 609**
Prediction and Measurement of Mass, Heat, and Momentum Transport in a Nonreacting Turbulent Flow of a Jet in an Opposing Stream **F 127**
A Round Jet Normal to a Crossflow (80-WA/FE-18) **F 142**
Two-Dimensional Turbulent Offset Jet-Boundary Interaction **F 154**
Jeuck, P. R., III Experimental and Analytical Investigation of a Natural Circulation System with Parallel Loops **HT 645**
Jezequel, L. Response of Periodic Systems to a Moving Load **AM 613**
Jiji, L. M. A Three-Dimensional Air-Vapor-Droplet Local Interaction Model for Spray Units **HT 514**; Two-Dimensional Turbulent Offset Jet-Boundary Interaction **F 154**
Jofriet, J. C. Further Studies of the Interface Boundary Conditions for Bolted Flanged Connections **PVT 240**
John, J. E. A. Drop-Size Distributions of Newtonian and Bingham Liquid Sprays Produced by Fan-Jet Pressure Nozzles With and Without the Preorifice (81-PID-3) **I 402**
Johnsen, S. E. J. A Statistical Simulation Model of Miner's Rule **MT 112**
Johnson, G. C. On the Applicability of Acoustoelasticity for Residual Stress Determination (81-WA/APM-8) **AM 791**
Johnson, G. D. A State Variable Analysis of Inelastic Deformation of Thin Walled Tubes **MT 305**
Johnson, G. E. Future Trends in Optimization (CR) **MD 677**
Johnson, G. R. Dynamic Analysis of Explosive-Metal Interaction in Three Dimensions **AM 30**; Dynamic Analysis of a Torsion Test Specimen Including Heat Conduction and Plastic Flow **MT 201**
Johnson, W. Analytical Puncture Study of Circular Metal Plates (D) **PVT 206**; Piercing of Cylindrical Tubes (80-C2/PVP-150) **PVT 255**
Johnston, A. M. A Single-Stage Ammonia/Water Absorption Cycle With Integrated Heat Exchange Components **SE 42**
Johnston, J. P. A New Probe for Measurement of Velocity and Wall Shear Stress in Unsteady, Reversing Flow **F 478**; A Prediction Method for Planar Diffuser Flows (81-FE-5) **F 315**
Joint Axes
Determination of Extreme Distances of a Robot Hand—Part 1 A General Theory (80-DET-57) **MD 631**; Part 2: Robot Arms With Special Geometry (80-DET-58) **MD 776**
Joint Coordination
Control of Force Distribution in Robotic Mechanisms Containing Closed Kinematic Chains **DS 134**
Joints
The Role of Secondary Variables in the Measurement of the Mechanical Properties of the Lumbar Intervertebral Joint **BE 129**
System Approach to the Thermal Behavior and Deformation of Machine Tool Structures in Response to the Effect of Fixed Joints (80-WA/PROD-14) **I 67**
Viscoelastic Analysis of Adhesively Bonded Joints **AM 331**
Jones, J. L. An Evaluation of Steam Injected Combustion Turbine Systems (80-GT-51) **P 13**; (D) **P 17**; (AC) **P 18**
Jones, O. C., Jr. An Improvement in the Calculation of Turbulent Friction in Smooth Concentric Annuli **F 615**; Review—Basic Research Needs in Fluid Mechanics **F 509**
Jorgensen, G. J. The Effect of Receiver Optical Properties on Solar Thermal Electric Systems **SE 207**
Jørgensen, P. Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) **F 391**; (D) (AC) **F 395**
Jortner, J. *(reviewer)* Fracture Mechanics (BR) **MT 77**
Joslyn, H. D. Measurement of Turbine Rotor Blade Flows **P 400**
Joubert, F. Measuring the Actual Endurance Limit of One Specimen Using a Nondestructive Method **MT 71**
Joudi, K. A. Surface Contamination, Rejuvenation, and the Reproducibility of Results in Nucleate Pool Boiling **HT 453**
Journal Bearings
Active Vibration Control of a Flexible Rotor on Flexibly-Mounted Journal Bearings (81-WA/DSC-5) **DS 383**
An Analytical Solution for the Thermal Characteristics of Journal Bearings **L 443**
A Comparison of Film Temperatures and Oil Discharge Temperature for a Tilting-Pad Journal Bearing (80-C2/Lub-37) **L 115**
Fluid-Film Journal Bearings Operating in a Hybrid Mode: Part I—Theoretical Analysis and Design **L 558**; Part II—Experimental Investigation **L 566**
Friction Reduction in Turbulent Journal Bearings by High Polymers (D) **L 317**
Measured Characteristics of a Journal Bearing Oil Film (80-C2/Lub-51) **L 120**
Mobility and Impedance Definitions for Plain Journal Bearings (TB) **L 466**
Journal Review
A Ten-Year Retrospective On This Journal (F) **DS 1**
Joyce, J. A. The Effect of a Higher Loading Rate on the J_{IC} Fracture Toughness Transition Temperature of HY Steels **MT 133**
Ju, F. D. Structural Confinement and Safety Design of a Fast Reactor Core (80-C2/DET-112) **MD 289**
Juarbe, F. M. Factors Affecting Fatigue Strength of Nylon Gears (80-C2/DET-104) **MD 543**
Judd, R. L. An Analytical and Experimental Investigation of Bubble Waiting Time in Nucleate Boiling **HT 673**; Applicability of the Bubble Flux Density Concept (TN) **HT 175**
Jumarie, G. Space Sampling Effects in Nonlinear Distributed System Stability **DS 54**
Junctions
Theoretical and Experimental Investigation of Stress Waves at a Junction of Three Bars (81-APM-16) **AM 148**

K

Kaftanoğlu, B. Complete Numerical Solution of the Axisymmetrical Deep-Drawing Problem (81-WA/Mat-1) **MT 326**

Kalkar, J. J. On the Error That Can Be Induced by an Ergodicity Assumption (BN) **AM 654**

Kalnitsky, K. C. A First Principles Model for Steam Turbine Control Analysis **DS 51**

Kalsi, M. S. Elastohydrodynamic Lubrication of Offset O-Ring Rotary Seal (80-C2/Lub-7) **L 414**; (D) **L 424, 425, 426**; (AC) **L 427**

Kalumuck, K. M. A Perturbation Analysis of Fluid-Structure Interactions in a Model Test System **AM 7**

Kamath, K. I. Enhanced Oil Recovery by Flooding With Dilute Aqueous Chemical Solutions **ERT 285**

Kamiyama, S. Prediction of Gaseous Cavitation Occurrence in Various Liquids Based on Two-Phase Flow Analogy **F 551**; Scale Effects on Various Types of Limited Cavitation **F 405**; (D) (AC) **F 414**

Kan, W. C. Finite Element Analysis With the State Variable Transfer Matrix and Geometric Nonlinearity for Marine Pipelines in Subsurface Tow (80-Pet-47) **ERT 26**

Kannatey-Asibu, E., Jr. Quantitative Relationships for Acoustic Emission from Orthogonal Metal Cutting **I 330**

Kannel, J. W. Contact Stresses Between Elastic Cylinders: A Comprehensive Theoretical and Experimental Approach (80-C2/Lub-29) **L 40**

Kanninen, M. F. Dynamic Crack Propagation in Precracked Cylindrical Vessels Subjected to Shock Loading **PVT 155**; A Plastic Fracture Instability Analysis of Wall Breakthrough in a Circumferentially Cracked Pipe Subjected to Bending Loads **MT 194**; A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part I: J-Integral Analysis (80-WA/PVP-3) **PVT 352**; Part II: Experimental Verification on a Type 304 Stainless Steel Pipe (80-WA/PVP-4) **PVT 359**

Kantimathi, A. The Effects of Periodic High Loads on Fretting Fatigue **MT 223**

Kao, Y. C. Numerical Solution to a Two-Dimensional Conduction Problem Using Rectangular and Cylindrical Body-Fitted Coordinate Systems **HT 753**

Kapp, J. A. Stress Analysis of O.D. Notched Thick-Walled Cylinders Subjected to Internal Pressure or Thermal Loads **PVT 76**

Kapsa, Ph. Antiwear Mechanism of ZDDP in the Presence of Calcium Sulfonate Detergent **L 488**; (D) **L 494, 495**; (AC) **L 495**

Karcher, G. G. Recent Advances in the ASME Section VIII Division 1 and 2 Pressure Vessel Codes **PVT 119**

Karihaloo, B. L. Approximate Description of Crack Kinking and Curving (81-APM-22) **AM 515**

Karimi, A. Homogeneous Nucleation and the Spinodal Line **HT 61**

Karmel, A. Evaluation of Time-Duration Dependent Wheel Load Criteria for Wheelclimb Derailment (80-WA/DSC-21) **DS 219**

Karnopp, D. Minimum Energy-Loss Control of Electro- and Hydro-Mechanical Modulated Convertor Drives (80-C2/DET-42) **MD 48**

Kass, J. W. Low Cycle Fatigue of Commercial Piping Steels in a BWR Primary Water Environment **MT 15**

Kassir, M. K. Stress-Intensity Factor for a Three-Dimensional Rectangular Crack **AM 309**

Kasuba, R. An Extended Model for Determining Dynamic Loads in Spur Gearing (80-C2/DET-90) **MD 398**

Kasuya, K. Tooth Bearing Analysis and Surface Durability of Symmetrical Conformal Gears **MD 141**

Kato, H. The Effect of Nuclei on the Inception of Bubble and Sheet Cavitation on Axisymmetric Bodies **F 557**

Kato, M. NO_x Removal Process by Injection of NH_3 and H_2O_2 in Gas Turbine Exhaust Gas **P 589**

Kato, S. Frictional Properties of a Surface Covered With a Soft Metal Film—Part 1: Experiments on Friction Between a Single Protuberance and a Surface **L 236**; A Method to Measure Contact Pressure Between Metallic Surfaces by Changes in Surface Roughness (80-WA/Prod-18) **I 210**; Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part I: Plain Milling With a Single-Toothed Helical Cutter (80-WA/Prod-4) **I 165**; Part II: Plain Milling With a Multi-Toothed Helical Cutter (80-WA/Prod-5) **I 174**

Kato, T. A Method to Measure Contact Pressure Between Metallic Surfaces by Changes in Surface Roughness (80-WA/Prod-18) **I 210**; Rubber Surface Squeeze Film (80-C2/Lub-33) **L 398**; (D) (AC) **L 404**

Katsanis, T. The Third Two-Dimensional Problem of Three Dimensional Blade Systems of Hydraulic Machines (D) **F 483**

Katz, J. L. Micromechanical Oscillators and Techniques for Determining the Dynamic Moduli of Microsamples of Human Cortical Bone at Microstrains **BE 148**

Katz, S. Linear Fluid Resistance Using Switching Valves and a Tank **DS 352**

Kaufman, R. E. 1982 Mechanisms Conference **MD 556**

Kauzlarich, J. J. Rolling Bearing Life Modifying Factors for Film Thickness, Surface Roughness, and Friction (80-C2/Lub-16) **L 509**; (D) **L 516-518**; (AC) **L 519**

Kawaguchi, N. Optimum Strut-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) **F 294**

Kawamura, M. Instantaneous Pressure Distribution Around a Sphere in Unsteady Flow **F 497**

Kawano, O. Behavior of Self-Excited Chatter Due to Multiple Regenerative Effect **I 324**

Kays, W. M. Heat Transfer in the Accelerated Fully Rough Turbulent Boundary Layer **HT 153**

Kearney, D. W. Second Law Analysis and Synthesis of Solar Collector Systems **SE 23**

Keck, J. C. The Interrelationship between Soot and Fuel NO_x Control in Gas Turbine Combustors (80-GT-76) **P 43**

Keer, L. M. Approximate Description of Crack Kinking and Curving (81-APM-22) **AM 515**; Loss of Contact in the Vicinity of a Right-Angle Corner for a Simply Supported, Laterally Loaded Plate (81-WA/APM-11) **AM 597**

Keller, S. R. Mechanics of Blood Flow **BE 102**

Keltner, N. R. Unsteady Surface Element Method **HT 759**

Kemp, N. H. Forces on Staggered Airfoil Cascades in Unsteady In-Phase Motion **F 299**

Kemper, Y. The Nutating Traction Drive (80-GT-99) **P 154**

Kempka, S. N. The Influences of Property Variations on Natural Convection from Vertical Surfaces **HT 609**

Kennedy, F. E. Contact Temperature in Dry Bearings. Three Dimensional Theory and Verification (80-C2/Lub-40) **L 243**; (D) (AC) **L 252**

Kennedy, F. E., Jr. Surface Temperatures in Sliding Systems—A Finite Element Analysis (80-C2/Lub-28) **L 90**

Kerr, J. H. Kinematic Efficiency of Non-Circular Geared Transmissions **MD 170**

Kestin, J. Compound Hybrid Geothermal-Fossil Power Plants: Thermodynamic Analyses and Site-Specific Applications **P 797**

Khader, M. S. An Iterative Boundary Integral Numerical Solution for General Steady Heat Conduction Problems **HT 26**; A Surface Integral Numerical Solution for Laminar Developed Duct Flow **AM 695**

Khalifa, H. E. Compound Hybrid Geothermal-Fossil Power Plants: Thermodynamic Analyses and Site-Specific Applications **P 797**

Khalil, I. A Study of the Viscous and Nonadiabatic Flow in Radial Turbines **P 481**

Khan, A. A. Double Diffusive Instability in a Vertical Layer of a Porous Medium (TN) **HT 179**

Khan, M. A. Evaluation of Radiation Damage in Reactor Pressure Vessel Steel by Elastic-Plastic Fracture Mechanics **MT 276**

Khatibloo, M. On the Physical Basis of Auerbach's Law (TB) **MT 183**

Kiefer, B. V. Three-Dimensional Finite Element Analysis of Elastic-Plastic Crack Problems (80-C2/PVP-36) **PVT 214**

Kieras, K. C. Ride Quality Analysis of Multi-Level Auto Rack Equipped Flat Cars (79-WA/RT-4) **I 241**

Kimbrell, J. E. A Classification of Coupler-Line Envelopes from Hinged Four-Bar Linkages (80-DET-42) **MD 750**

Kimchi, Y. Design Improvements in LiBr Absorption Chillers for Solar Applications **SE 56**

Kinematic Analysis
Kinematic Analysis of Spatial Mechanisms Using Train Components **MD 823**

Kinematic Chains
Linkage Characteristic Polynomials: Definitions, Coefficients by Inspection (80-DET-8) **MD 578**

Kinematic Efficiency
Kinematic Efficiency of Non-Circular Geared Transmissions **MD 170**

Kinematic Mappings
Kinematic Mappings. Part 1: Classification of Algebraic Motions in the Plane (80-DET-16) **MD 585**; Part 2: Rational Algebraic Motions in the Plane (80-DET-17) **MD 712**

Kinematicians
Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform"—Part 1. Calculations for Machine Settings For Member Gear Manufacture of the Formate and Helixform Hypoid Gears (80-C2/DET-31) **MD 83**; Part 2. Machine Setting Calculations for the Pinions of Formate and Helixform Gears **MD 89**; Part 3. Analysis and Optimal Synthesis Methods for Optimal Synthesis Methods for Mismatch Gearing and its Application for Hypoid Gears of "Formate" and Helixform" (80-C2/DET-33) **MD 102**; (D) **MD 110**; (AC) **MD 112**

Kinematics
16th ASME Mechanisms Conference (CR) **MD 550**
The Influence of Linear and Rotating Motions on the Friction of Polymers (80-C2/Lub-44) **L 503**; (D) **L 507**; (AC) **L 508**

Kinetic Theory
On Thermodynamics and Kinetic Theory of Ideal Rubber Membranes **AM 345**

King, C. F. Vortex Amplifiers for Pipeline Protection **DS 358**

King, D. L. Heliostat Characterization at the Central Receiver Test Facility **SE 82**

King, R. B. Nondestructive Evaluation of the *J* and *M* Integrals (81-APM-2) **AM 83**

King, V. W. Temperature Gradients Through EHD Films and Molecular Alignment Evidenced by Infrared Spectroscopy (80-C2/Lub-12) **L 65**

Kingsbury, E. Some Limitations in Applying Classical EHD Film Thickness Formulas to a High-Speed Bearing (80-C2/Lub-13) **L 295**; (D) **L 302**; (AC) **L 303**

Kinked Cracks
Crack Path Prediction for a Kinked Crack in the Neighborhood of a Circular Inclusion in an Infinite Medium (81-APM-31) **AM 313**

Kinking
Approximate Description of Crack Kinking and Curving (81-APM-22) **AM 515**
Energy-Release Rate and Crack Kinking Under Combined Loading **AM 520**

Kinoshita, K. Effect of Molecular Weight Distribution of Mineral Oil on Tribofailure of Spur Gears **MD 210**

Kiock, R. Boundary Layer Studies on Highly Loaded Cascades using Heated Thin Films and a Traversing Probe (80-GT-137) **P 237**

Kirchgraber, U. *(author)* Methoden der analytischen Störungsrechnung und ihre Anwendunge (BR) **AM 684**

Kirk, C. L. Dynamic Response of a Double Articulated Offshore Loading Structure to Non-collinear Waves and Current (80-Pet-56) **ERT 41**

Kishimoto, K. Crack-Tip Stress and Strain Singularity in Thermally Loaded Elastic-Plastic Material (BN) **AM 428**; Energy-Release Rate in Elastic-Plastic Fracture Problems (81-WA/APM-21) **AM 825**

Kiss, E. Low Cycle Fatigue of Commercial Piping

Steels in a BWR Primary Water Environment MT 15

Kistler, B. L. Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (TB) PVT 200

Kleckner, R. J. Calculated and Experimental Data for a 118-mm Bore Roller Bearing to 3 Million DN (80-C2/Lub-14) L 274; (D) L 282; (AC) L 283

Klein, A. REVIEW: Effects of Inlet Conditions on Conical-Diffuser Performance F 250; REVIEW: Turbulent Developing Pipe Flow F 243

Klein, S. A. An Algorithm for Calculating Monthly-Average Radiation on Inclined Surfaces SE 29; *(author)* Solar Energy Programs for HP-41 and TI-59 Calculators (BR) SE 362

Kleinhenz, N. J. A Technical Evaluation of Modular Incinerators With Heat Recovery ERT 265

Kline, S. J. Complex Turbulent Flows: Comparison of Computation and Experiment F 184; A Prediction Method for Planar Diffuser Flows (81-FE-5) F 315

Klompas, N. Blade Excitation by Elliptical Whirling in Viscous-Damped Jet Engines (80-GT-168) P 326

Klysov, A. A. *(editor)* Enzyme Engineering, Future Directions (BR) BE 217

Knapp, R. H. Torque and Stress Balanced Design of Helically Armored Cables (80-WA/OCE-1) I 61

Knauss, D. T. Performance of a Multiphase Boiling MHD Generator P 582

Knee Prostheses

Analysis of Model Variables and Fixation Post Length Effects on Stresses Around a Proathesis in the Proximal Tibia BE 239

Knudsen Number

Effect of Knudsen Number on Dropwise Condensation HT 606

Ko, N. W. M. Initial Region of Subsonic Coaxial Jets of High Mean-Velocity Ratio F 335

Kobayashi, A. S. Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (TB) PVT 200; On the Motion of an Axial Through Crack in a Pipe PVT 281; A Sensitivity Study on Numerical Analysis of Dynamic Girth Crack Propagation (80-C2/PVP-107) PVT 169; The Use of the Split Ring in Modeling Ductile Axial Crack Extension in Pipes PVT 151

Kobayashi, N. Residual Stresses of Czochralski-Grown Crystal AM 866

Koch, C. C. Stalling Pressure Rise Capability of Axial Flow Compressor Stages (81-GT-3) P 645

Kodama, Y. The Effect of Nuclei on the Inception of Bubble and Sheet Cavitation on Axisymmetric Bodies F 557

Kodres, C. A. Design and Evaluation of Evaporating Lens Direct Contact Heat Exchangers ERT 128

Koenig, K. Aerodynamic Effects of Shape, Camber, Pitch, and Ground Proximity on Idealized Ground-Vehicle Bodies F 631; (D) F 637, 638; (AC) F 638

Koguchi, K. An Experimental Investigation of Boiling Heat Transfer of Fluorocarbon R-11 Refrigerant for Concentric-Tube Thermosyphon HT 472

Kohli, D. Mathematical Model for Design Conditions for Cooling Load Calculations (80-C2/DET-122) MD 328

Kojima, T. Optimum Strut-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) F 294

Kolb, R. P. Long Arc Shrouding—A Reliability Improvement for Untuned Steam Turbine Blading (78-JPGC/Pwr-12) P 522; (D) P 527, 528, 530; (AC) P 528, 529, 530

Kollman, W. *(editor)* Computational Fluid Dynamics (BR) F 367; Computational Fluid Dynamics, Vol. 2 (BR) F 367

Kollmann, F. G. Rotating Elasto-plastic Interference Fits (80-C2/DET-11) MD 61

Komanduri, R. On the Mechanics of Chip Segmentation In Machining (80-WA/PROD-3) I 33

Komotori, K. Cooling of Freely Falling Liquid Drops with a Shell of an Immiscible Volatile Liquid HT 506

Kondo, T. A New Parameter for Characterizing Corrosion Fatigue Crack Growth MT 298

Kondo, Y. Behavior of Self-Excited Chatter Due to Multiple Regenerative Effect I 324

Kops, L. System Approach to the Thermal Behavior and Deformation of Machine Tool Structures in Response to the Effect of Fixed Joints (80-WA/PROD-14) I 67

Koren, Y. Adaptive Control Optimization of Grinding (80-WA/PROD-12) I 103; Reference-Pulse Circular Interpolators for CNC Systems (80-WA/PROD-7) I 131

Kornecki, A. On the Nonbuckling of a Circular Ring Under "Wrapping" Loading (D) AM 682

Korst, H. H. Evaluation of Vehicle Drag Parameters From Coastdown Experiments Conducted Under Nonideal Environmental Conditions F 133; (D) F 140; (AC) F 141

Koshal, D. Fluid-Film Journal Bearings Operating in a Hybrid Mode: Part I—Theoretical Analysis and Design L 558; Part II—Experimental Investigation L 566

Kossa, S. S. The Vibration Isolating Properties of Uncentralized Squeeze-Film Damper Bearings Supporting a Flexible Rotor P 781

Kostors, C. H. Ammonia Turbine Design for Ocean Thermal Energy Conversion (OTEC) Plants SE 92

Kot, C. A. Pressure Transient Analysis of Elbow-Pipe Experiments Using the PTA-2 Computer Code (80-C2/PVP-22) PVT 33; Transient Cavitation in Fluid-Structure Interactions (80-C2/PVP-23) PVT 345

Kotwal, R. A New Approach for Erosion Prediction Due To Fly Ash (80-GT-95) P 265

Kovac, J. Continuous Miner Noise (80-WA/NC-4) I 282; An Investigation of the Mechanics and Noise Associated with Coal Cutting (80-WA/NC-1) I 257

Kovasznay, L. S. G. Drag Reducing Polymer in Helicoidal Flow F 491; Instantaneous Pressure Distribution Around a Sphere in Unsteady Flow F 497; Search for Large-Scale Coherent Structures in the Nearly Self-Preserving Region of a Turbulent Axisymmetric Jet F 503

Kovijanic, C. Esophageal Accelerometer—Indicator of Cardiovascular Function BE 160

Koye, K. A. An Experimental Evaluation of the Hamrock and Dowson Minimum Film Thickness Equation for Fully Flooded EHD Point Contacts (80-C2/Lub-38) L 284; (D) L 294

Krafft, J. M. Editorial MT 187

Krain, H. A Study on Centrifugal Impeller and Diffuser Flow (81-GT-9) P 688

Krajcinovic, D. The Continuous Damage Theory of Brittle Materials. Part 1: General Theory AM 809; Part 2: Uniaxial and Plane Response Modes AM 816

Kraus, A. D. A General Extended Surface Analysis Method HT 599

Kraus, H. *(author)* Creep Analysis (BR) AM 451

Krause, H. Investigation Into the Influence of Dynamic Forces on the Tribological Behavior of Bodies in Rolling/Sliding Contact With Particular Regard to Surface Corrugations (80-C2/Lub-52) L 26

Krauter, A. I. Generation of Squeal/Chatter in Water-Lubricated Elastomeric Bearings (80-C2/Lub-45) L 406; (D) (AC) L 413

Kreider, J. F. *(editor)* Solar Energy Handbook (BR) SE 362

Kreith, F. Review—Basic Research Needs in Fluid Mechanics F 509; Second Law Analysis and Synthesis of Solar Collector Systems SE 23; *(editor)* Solar Energy Handbook (BR) SE 362; Solar Priorities (Ed) SE 1; *(reviewer)* Thermal Energy Storage and Regeneration (BR) SE 178

Krempl, E. The Rate (Time)-Dependent Behavior of Ti-7Al-2Cb-1Ta Titanium Alloy at Room Temperature Under Quasi-Static Monotonic and Cyclic Loading (81-APM-7) AM 55

Kronk, S. Creeping Viscous Flow Around a Heat-Generating Solid Sphere AM 239; Theories for Elastic Plates Via Orthogonal Polynomials AM 900; Vibration of an Elastic Circular Plate on an Elastic Half Space—A Direct Approach AM 161

Krenzer, T. J. Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) MD 127; (D) MD 132; (AC) MD 133; A Method of Local Synthesis of Gears Grounded on the Connections Between the Principal and Geodetic Curvatures of Surfaces (80-C2/DET-30) MD 114; (D) MD 122; Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform"—Part 1. Calculations For Machine Settings For Member Gear Manufarture of the Formate and Helixform Hypoid Gears (80-C2/DET-31) MD 83; Part 2. Machine Setting Calculations for the Pinions of Formate and Helixform Gears MD 89; Part 3. Analysis and Optimal Synthesis Methods For Mismatch Gearing and its Application For Hypoid Gears of "Formate" and "Helixform" (80-C2/DET-33) MD 102; (D) MD 110; (AC) MD 112

Krishnadev, M. R. Strong Tough HSLA Steels Via Processing and Heat Treating of Cu-Ni-Cb and Cu-Ti-B Compositions MT 207

Krishnaiah Chetty, O. V. On Some Aspects of Surface Formation in ECM I 341

Kromodihardjo, S. Optimization of Multipass Turning With Constraints I 462

Kubo, A. Contact Stress Between Rollers With Surface Irregularity (80-C2/DET-10) MD 492

Kucuk, F. Modeling Capabilities for the Devonian Gas Shales ERT 270

Kujawski, D. The Rate (Time)-Dependent Behavior of Ti-7Al-2cb-1Ta Titanium Alloy at Room Temperature Under Quasi-Static Monotonic and Cyclic Loading (81-APM-7) AM 55

Kulak, R. F. A Finite Element Formulation for Fluid-Structure Interaction in Three-Dimensional Space PVT 183

Kulkarni, S. V. Application of the Reissner Method to a Timoshenko Beam (BN) AM 672

Kullgren, T. E. Stress Intensity Factors for Corner Cracked Holes Under General Loading Conditions MT 171

Kumar, A. The Workspaces of a Mechanical Manipulator (80-DET-107) MD 665

Kumar, K. V. The Role of Wheel-Work Deflection in Grinding Operations (80-WA/PROD-11) I 73

Kumar, S. Laboratory Investigation of Wheel Rail Contact Stresses for U.S. Freight Cars (80-WA/RT-8) I 246

Kummrow, R. Measurements and Observations on Wheelset Lateral Dynamics of Locomotives on Tangent Track DS 375

Kundu, T. Diffraction of Elastic Waves by a Surface Crack on a Plate AM 570

Kuo, J. T. Drag Reducing Polymer in Helicoidal Flow F 391

Kurajian, G. M. DED Meetings Information MD 554; MD 583

Kurashige, M. Infiltration of a Fluid Into a Dry Poro-Elastic Body AM 259; Instability of a Transversely Isotropic Elastic Slab Subjected to Axial Loads AM 351

Kurisu, T. Externally Pressurized Two Layer Film Bearing—Gas Bearing With Liquid Layer (80-C2/Lub-41) L 573; (D) (AC) L 577

Kurkov, A. P. Flutter Spectral Measurements Using Stationary Pressure Transducers P 461

Kurokawa, N. Contact Stress Between Rollers With Surface Irregularity (80-C2/DET-10) MD 492

Kwatny, H. G. A First Principles Model for Steam Turbine Control Analysis DS 61

Kwong, C. W. Design and Evaluation of Drag-Link Driven Cams (80-DET-38) MD 582

Kyriakides, S. Experimental Determination of the Propagation Pressure of Circular Pipes (82-PVP-2) PVT 328

L

Laboratory Furnaces

Experimental Results in the Modeling and Control of a Small Furnace DS 370

Laborde, J. M. A Method of Analyzing the Three-Dimensional Stiffness Properties of the Intact Human Lumbar Spine (TB) BE 299

LaBouff, G. A. Resonances and Instabilities in Dynamic Systems Incorporating a Cam MD 914

Labyrinth Seals

Advances in Labyrinth Seal Aeroelastic Instability Prediction and Prevention (80-GT-151) P 308

Lahey, R. T., Jr. Phase Distribution Mechanisms in Turbulent Two-Phase Flow in Channels of Arbitrary Cross Section F 583

Lai, J. S. Creep of 2618 Aluminum Under Side-Steps of Tension and Torsion and Stress Reversal Predicted by a Viscous-Viscoelastic Model (81-APM-8) **AM 47**

Lai, W. M. Effects of Nonlinear Strain-Dependent Permeability and Rate of Compression on the Stress Behavior of Articular Cartilage **I E 61**

Laitone, J. A. A Numerical Solution for Gas-Particle Flows at High Reynolds Numbers (81-WA/APM-10) **AM 485**

Lakes, R. S. Transient Study of Couple Stress Effects in Compact Bone: Torsion **BE 275**

Lakshminarayana, B. Conventional Probes for the Relative Flow Measurement in a Turbomachinery Rotor Blade Passage **P 406**; Measurement Methods in Rotating Components of Turbomachinery **P 373**; Structure and Decay Characteristics of Turbulence in the Near and Far-Wake of a Moderately Loaded Compressor Rotor-Blade (80-GT-95) **P 131**; Techniques for Aerodynamic and Turbulence Measurements in Turbomachinery Rotors **P 374**

Lalor, M. J. An Advanced Apparatus for the Study of Roller and Cage Slip in High-Speed Roller Bearings (80-C2/Lub-2) **L 46**

Lam, C. K. G. A Modified Form of the k-ε Model for Predicting Wall Turbulence **F 456**

Lamb, J. P. System Thermodynamics of Energy Conversion Plants for Geopressured Resources (80-Pet-31) **ERT 166**

Laminar Bubbles

A Possible Criterion for Cavitation Inception on Hemispherical Headforms **F 577**

Laminar Conditions

Centrifugal Effects in Thrust Bearings and Seals Under Laminar Conditions (80-C2/Lub-21) **L 126**

Laminar Developed Flow

A Surface Integral Numerical Solution for Laminar Developed Duct Flow **AM 695**

Laminar Flow

Analytically Determined Fin-Tip Heat Transfer Coefficients **HT 18**

Dispersion in Laminar Flow Through Tubes by Simultaneous Diffusion and Convection **AM 217**

Steady Laminar Flow through Twisted Pipes. Fluid Flow in Square Tubes **HT 785**

Laminar Free Convection

Reference Temperatures for Supercritical Laminar Free Convection on a Vertical Flat Plate **HT 613**

Laminar Jets

Developing Region of Laminar Jets With Parabolic Exit Velocity Profiles (81-FE-3) **F 322**

Laminar Proportional Amplifiers

A High Order, Lumped Parameter, Jet Dynamic Model for the Frequency Response of Laminar Proportional Amplifiers **DS 317**

Laminar Separation

Cavitation Inception Observations on Six Axisymmetric Headforms **F 273**; (D) (AC) **F 279**

A Note on the Effect of Short and Long Laminar Separation Bubbles on Desinent Cavitation **F 28**

Laminar Separation Bubbles

The Initiation of Gaseous Microbubble Growth In Laminar Separation Bubbles **F 543**; (D) (AC) **F 549**

Laminated Composite Beams

Some Observations in the Behavior of Laminated Composite Beams (BN) **AM 431**

Laminates

Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) **AM 371**

Lance Tube Cooling

Water Tempered Cleaning Medium for Sootblowers **P 581**

Landau, I. D. Model Reference Adaptive Controllers and Stochastic Self-Tuning Regulators—A Unified Approach **DS 404**

Landing Gear

Longitudinal Instability in Braked Landing Gear **DS 259**

Lang, T. Interferometric Measurements in a Turbine Cascade Using Image-Plane Holography (80-GT-91) **P 124**

Lapping

Stochastic and Fuzzy Decision Problems in Three-Workpiece Lapping Process **I 192**

Large Pipes

Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (TB) **PVT 200**

Larguier, R. Experimental Analysis Methods for Unsteady Flows in Turbomachines **P 415**

Lark, R. F. Superhybrid Composite Blade Impact Studies (81-GT-24) **P 731**

LaRosa, J. A. Long Arc Shrouding—A Reliability Improvement for Untuned Steam Turbine Blading (78-JPGC/Pwr-12) **P 522**; (D) **P 527, 528, 530**; (AC) **P 528, 529, 530**

Larrabee, E. E. Evaluation of Vehicle Drag Parameters From Coastdown Experiments Conducted Under Nonideal Environmental Conditions **F 133**; (D) **F 140**; (AC) **F 141**

Larsen, P. S. Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) **F 391**; (D) (AC) **F 395**

LaRue, J. C. Prediction and Measurement of Mass, Heat, and Momentum Transport in a Nonreacting Turbulent Flow of a Jet in an Opposing Stream **F 127**

Laser Anemometry

Flow Instability at the Inlet of a Centrifugal Compressor **P 451**

Laser Beams

Anisotropic Two-Dimensional Scattering: Comparison of Experiment with Theory **HT 127**

Efficient Laser Anemometer for Intra-Rotor Flow Mapping in Turbomachinery **P 424**

In-Process Measurement of Surface Roughness in Turning by Laser Beams (80-WA/Prod-17) **I 203**

Laser Anemometer Measurements in a Transonic Axial Flow Compressor Rotor **P 430**

Laser Fusion Reactors

Liquid Sheet Jet Experiments: Comparison With Linear Theory **F 595**; (D) **F 603**; (AC) **F 604**

Laser-Optical Measurement System

Laser-Optical Blade Tip Clearance Measurement System **P 457**

Laser Transit Anemometry

Optical Advances in Laser Transit Anemometry **P 438**

Laser Velocimeter

A Comparison of Cold and Reacting Flows Around a Bluff-Body Flame Stabilizer **F 328**

Latent Heat Storage Units

Log-Mean Temperature-Difference Correction Factors for Passive Latent-Heat Storage Units **SE 281**

Transient Response of a Latent Heat Storage Unit: An Analytical and Experimental Investigation **SE 275**

Lateral Dynamics

Experimental Investigation of Freight Car Lateral Dynamics **DS 201**

Lateral Dynamics of a Rail Transit Vehicle: A Comparison of Experimental and Theoretical Results **DS 39**

Lateral Pressure

Elastic Instability of a Heated Annular Plate Under Lateral Pressure **AM 399**

Laterally Loaded Plates

Loss of Contact in the Vicinity of a Right-Angle Corner for a Simply Supported, Laterally Loaded Plate (81-WA/APM-11) **AM 597**

Latta, A. F. The Effects of Regional Insolation Differences upon Advanced Solar Thermal Electric Power Plant Performance and Energy Costs (79-WA/Sol-1) **SE 213**

Lau, J. H. Bending and Twisting of Internally Pressurized Thin-Walled Cylinder With Creep (BN) **AM 439**

Lau, S. C. Effect of Plenum Length and Diameter on Turbulent Heat Transfer in a Downstream Tube and on Plenum-Related Pressure Losses **HT 415**; Heat Transfer from a Plate Elevated above a Host Surface and Washed by a Separated Flow Induced by the Elevation Step **HT 441**

Lau, S. L. Amplitude Incremental Variational Principle for Nonlinear Vibration of Elastic Systems (81-WA/APM-26) **AM 959**

Lau, W. S. Some Investigations Into Machining With Driven Rotary Tools **I 469**

Laudadio, F. J. Rotordynamic Instability in Centrifugal Compressors—Are All the Excitations Understood? (80-GT-149) **P 286**

Lauer, J. L. Temperature Gradients Through EHD Films and Molecular Alignment Evidenced By Infrared Spectroscopy (80-C2/Lub-12) **L 65**

Launder, B. E. The Prediction of Three-Dimensional Discrete-Hole Cooling Processes—Part 2: Turbulent Flow **HT 141**

Law, E. H. Experimental Investigation of Freight Car Lateral Dynamics **DS 201**

Layered Vessels

Evaluation of Thermal Conductivity in Layered Vessels (82-PVP-1) **PVT 307**

Lea, J. A. Passive Acoustic Detection of Gas Leaks in Buried Pipes (80-WA/NC-17) **I 314**

Lead/Lag Approximations

Use of Lead/Lag Approximations in Modeling Thermal Regenerator Systems **DS 49**

Leakage

Hydrodynamic Lubrication in Wavy Contacting Face Seals—A Two Dimensional Model (80-C2/Lub-10) **L 578**; (D) (AC) **L 586**

Lebeck, A. O. An Analysis of Mechanical Face Seal Vibrations (80-C2/Lub-8) **L 428**; (D) (AC) **L 434**; A Cavitation Algorithm (80-C2/Lub-54) **L 350**; (D) (AC) **L 354**; Hydrodynamic Lubrication in Wavy Contacting Face Seals—A Two Dimensional Model (80-C2/Lub-10) **L 578**; (D) (AC) **L 586**

Lee, D. A Fluidic, Hydraulic Sevovalve **DS 331**

Lee, E. H. A Correct Definition of Elastic and Plastic Deformation and Its Computational Significance **AM 35**; (Er) **AM 686**

Lee, E. I. Heat Transfer in Air Enclosures of Aspect Ratio Less than One **HT 617**

Lee, J. C. Closed-Cycle Gas Turbine Working Fluids (80-GT-135) **P 220**

Lee, J. J. Melting of a Vertical Ice Wall by Free Convection into Fresh Water **HT 13**

Lee, K. M. Nongray Particulate Radiation in an Isothermal Cylindrical Medium **HT 121**

Lee, R. C. Oscillatory Compressional Behavior of Articular Cartilage and Its Associated Electromechanical Properties **BE 280**

Lee, T. W. Optimization of High Speed Geneva Mechanisms (80-DET-56) **MD 621**

Lee, Y. S. An Analysis of Power Law Viscous Materials Under a Plane-Strain Condition Using Complex Stream and Stress Functions (81-WA/APM-1) **AM 486**

Lefebvre, D. A Criterion for Low-Cycle Fatigue Failure Under Biaxial States of Stress **MT 1**

Leibovich, S. *(reviewer)* Geophysical Fluid Dynamics (BR) **AM 684**

Leipholz, H. H. E. *(editor)* Structural Control (BR) **AM 685**

Leissa, A. Vibrations of Free Circular Plates Having Elastic Constraints and Added Mass Distributed Along Edge Segments (BN) **AM 196**

Leitmann, G. On the Efficacy of Nonlinear Control in Uncertain Linear Systems **DS 95**; A Note on Avoidance Control **DS 69**

Lekoudis, S. G. Liquid Sheet Jet Experiments: Comparison With Linear Theory **F 595**; (D) **F 603**; (AC) **F 604**

Lens

Design and Evaluation of Evaporating Lens Direct Contact Heat Exchangers **ERT 128**

Leondes, C. T. Payoff Sensitivity of Linear Quadratic Differential Games to Parameter Change **DS 36**

LeQuoc, S. Analysis of a Pneumatically Coupled Cam-Actuated Mechanism **DS 290**

Leschziner, M. A. Calculation of Annular and Twin Parallel Jets Using Various Discretization Schemes and Turbulence-Model Variations **F 352**

Letan, R. A Parametric Study of a Particulate Direct Contact Heat Exchanger (78-WA/HT-16) **HT 586**

LeTourneau, J. J. Pattern Factor Improvement in the F-100 Primary Combustion System (81-GT-25) **P 739**

Leung, J. C. M. An Improvement in the Calculation of Turbulent Friction in Smooth Concentric Annuli **F 615**

Levesque, M. J. Vascular Endothelial Morphology as an Indication of the Pattern of Blood Flow **BE 172**

Levi, A. A. Comments on Aleck's Stress Distribution in Clamped Plates (BN) **AM 442**

Levy, S. Application of Mixing Length Theory to

Wary Turbulent Liquid—Gas Interface HT 492
Lewis, H. J. *(editor)* Issues and Current Studies (BR) BE 217
Lewis, J. B. *(author)* Analysis of Linear Dynamic Systems (BR) MD 262
Lewis, J. L. Analysis of Model Variables and Fixation Post Length Effects on Stresses Around a Prosthesis in the Proximal Tibia BE 239
Li, C. The Rolling Contact of Two Elastic-Layer-Covered Cylinders Driving a Loaded Sheet in the Nip AM 889
Li, C.-H. The Effect of Bevel Angle on Safety Valve Vent-Pipe Systems P 587; On the Steady State and Dynamic Performance Characteristics of Floating Ring Bearings (80-C2/Lub-17) L 389; (D) (AC) L 397
Li, C.-Y. A Phenomenological Model for Transient Deformation Based on State Variables MT 314; A State Variable Analysis of Inelastic Deformation of Thin Walled Tubes MT 305
Li, S. Tilting, Stretching, Pairing and Collapse of Vortex Structures in Confined Counter-Current Flow (80-WA/FE-11) F 486
Li, T. F. Three-Directional Fluid Pool Seismic Sloshing Analysis (80-C2/PVP-49) PVT 10
Libai, A. On the Nonlinear Intrinsic Dynamics of Doubly Curved Shells (81-WA/APM-9) AM 909
Liberatore, A. J. Field Results From a Linked Vertical Well UCG Test in Deep, Thin-Seam Bituminous Coal ERT 277
Licht, L. Design and Performance of Compliant Thrust Bearings With Spiral-Groove Membranes on Resilient Supports (80-C2/Lub-36) L 373; (D) L 385, 386; (AC) L 386; Dynamic Characteristics of a High-Speed Rotor With Radial and Axial Foil-Bearing Supports (80-C2/Lub-35) L 361; (D) L 370, 371; (AC) L 371; Rubber Surface Squeeze Film (80-C2/Lub-33) L 398; (D) (AC) L 404
Lichtarowicz, A. Cavitation Inception in Spool Valves F 564; (D) F 575; (AC) F 576
Lienhard, J. H. Boiling Burnout During Crossflow over Cylinders, beyond the Influence of Gravity HT 478; Correlation of Pressure Undershoot During Hot-Water Drepressurization HT 52; Entropy: A New World View (BR) SE 178; Heat Conduction through "Yin-Yang" Bodies (TN) HT 600; Homogeneous Nucleation and the Spinodal Line HT 61
Life Prediction Methods
ASME 1983 Materials Division Conference, preview MD 386
Ligaments
The Time and History-Dependent Viscoelastic Properties of the Canine Medial Collateral Ligament BE 293
Light Alloy Pistons
Thermal and Thermoelastic Analysis of Spheroidal Graphite Cast Iron and Light Alloy Pistons MD 895
Light Scattering
A Comparison of Two Optical Techniques for Measuring Cavitation Nuclei F 8
Lightly Loaded Cylinders
An Analytical Solution for the Normal Load Carrying Capacity of Lightly Loaded Cylinders in Combined Rolling, Sliding and Normal Motion (TB) L 467
Lightweight Gearing
The Analytical and Experimental Evaluation of Resonant Response in High-Speed, Lightweight, Highly Loaded Gearing (80-C2/DET-22) MD 348
Lilley, G. M. Complex Turbulent Flows: Comparison of Computation and Experiment F 184
Limit Cycles
On the Steady State and Dynamic Performance Characteristics of Floating Ring Bearings (80-C2/Lub-17) L 389; (D) (AC) L 397
Limit Designs
Engineering Plasticity by Mathematical Programming (BR) MT 77
Limited Cavitation
Observations of the Various Types of Limited Cavitation on Axisymmetric Bodies F 415
Scale Effects on Various Types of Limited Cavitation F 405; (D) (AC) F 414
Lin, C.
A Nondimensional Analysis of Boiling Dry a Vertical Channel with a Uniform Heat Flux HT 667
Lin, C. C. Three-Directional Fluid Pool Seismic Sloshing Analysis (80-C2/PVP-49) PVT 10
Lin, C. S. Optimum Path Planning for Mechanical Manipulators DS 142
Lin, F. N. Laminar Free Convection Boundary Layer Heat Transfer over Non-Isothermal Surface (TN) HT 819; Torque Characteristics of a 122-Centimeter Butterfly Valve With a Hydro/Pneumatic Actuator F 396
Lin, S. An Exact Solution of the Sublimation Problem in a Porous Medium HT 165
Lin, S. R. *(reviewer)* Engineering Plasticity by Mathematical Programming (BR) MT 77
Lin, W. H. Acoustic Loading Effects on Oscillating Rod Bundles (80-C2/PVP-124) PVT 322
Lindhout, J. P. F. A Method for the Calculation of 3D Boundary Layers on Practical Wing Configurations F 104
Line Contacts
A Film Thickness Analysis for Line Contacts Under Pure Rolling Conditions With a Non-Newtonian Rheological Model (80-C2/Lub-26) L 305; (D) L 313; (AC) L 314
Line Contact Deformation: A Cylinder Between Two Flat Plates (80-C2/Lub-50) L 21
Line-Focus Solar Collectors
Analytical Dynamic Modeling of Line-Forces Solar Collectors SE 244
Line Trajectories
The Curvature Theory of Line Trajectories in Spatial Kinematics (80-DET-18) MD 718
Linear Cutting Apparatus
An Investigation of the Mechanics and Noise Associated with Coal Cutting (80-WA/NC-1) I 257
Linear Damage
A Reinterpretation of the Palmgren-Miner Rule for Fatigue Life Prediction (D) AM 446; (AC) AM 448
Linear Damped Systems
Optimum Vibration Absorbers for Linear Damped Systems MD 908
Linear Dynamic Systems
Analysis of Linear Dynamic Systems (BR) MD 262
Linear Dynamical Systems
On the Efficacy of Nonlinear Control in Uncertain Linear Systems DS 95
Linear Feedback
A New Feedback Method for Dynamic Control of Manipulators DS 119
Linear Feedback Control
Improved Statistical Linearization for Analysis and Control of Nonlinear Stochastic Systems—Part I: An Extended Statistical Linearization Technique DS 14; Part II: Application to Control System Design DS 22
Linear Fluid Resistance
Linear Fluid Resistance Using Switching Valves and a Tank DS 352
Linear Instability
The Linear Instability Due to the Compressible Crossflow on a Swept Wing (D) (AC) F 179
Linear Prediction Theory
Linear Prediction Theory for Digital Simulation of Sea Waves (81-Pet-7) ERT 243
Linear Stability Theory
Liquid Sheet Jet Experiments: Comparison With Linear Theory F 595; (D) F 603; (AC) F 604
Linear Stochastic Systems
A Diagnosis Method for Linear Stochastic Systems With Parametric Failures DS 28
Linear Systems
About Bilinear Systems and This Issue (F) DS 75
Stable Linear Systems Simplification Via Padé Approximations to Hurwitz Polynomials DS 279
Lines
Equations for Four-Bar Line-Envelopes (80-DET-40) MD 743; (D) (AC) MD 749
Lingaiah, K. Conformity Factor In Wildhaber-Novikov Circular-Arc Gears (80-C2/DET-15) MD 134
Linkage
Closure Equations for a Six-Link Coupler-Drive Mechanism MD 236
Implementation of Solution Rectification Techniques in an Interactive Linkage Synthesis Program (80-DET-91) MD 657
Linkage Characteristic Polynomials: Definitions, Coefficients by Inspection (80-DET-8) MD 57a
Linkage-Cam Systems
Design and Evaluation of Drag-Link Driven Cams (80-DET-38) MD 592
Linkage Mechanisms
On Predicting Vibrations in Realistically Proportioned Linkage Mechanisms (80-DET-4) MD 706
Linkage Systems
The Application of Finite Element Methods to the Dynamic Analysis of Flexible Spatial and Co-Planar Linkage Systems (80-DET-87) MD 643
Linkages
A New Concept for Force Balancing Machines for Planar Linkages. Part I: Theory (80-DET-73) MD 637
Linthorst, S. J. M. Flow Structure with Natural Convection in Inclined Air-Filled Enclosures HT 535
Li Qi-Han, Experiments on the Vibration Characteristics of a Rotor With Flexible, Damped Support (80-GT-124) P 174
Liquid Cross-Flow
Flow Velocity Dependence of Damping in Tube Arrays Subjected to Liquid Cross-Flow PVT 130
Liquid Droplets
Droplet Dynamics in Creeping Flows (81-APM-29) AM 224
Liquid-Gas Solutions
On the Equilibrium of Cavitation Nuclei in Liquid-Gas Solutions F 425; (D) (AC) F 430
Liquid Heating
Uncertainty in Determining Thermal Performance of Liquid-Heating Flat-Plate Solar Collectors SE 126
Liquid Layer
Externally Pressurized Two Layer Film Bearing—Gas Bearing With Liquid Layer (80-C2/Lub-41) L 573; (D) (AC) L 577
Liquid Sheet Jets
Liquid Sheet Jet Experiments: Comparison With Linear Theory F 595; (D) F 603; (AC) F 604
Liquid Sloshing
Three-Directional Fluid Pool Seismic Sloshing Analysis (80-C2/PVP-49) PVT 10
Liquid Sprays
Drop-Size Distributions of Newtonian and Bingham Liquid Sprays Produced by Fan-Jet Pressure Nozzles With and Without the Preorifice (81-PID-3) I 402
Liquid Storage Tanks
Earthquake Response of Deformable Liquid Storage Tanks (80-C2/PVP-79) AM 411
Liquid Volume
On the Equilibrium of Cavitation Nuclei in Liquid-Gas Solutions F 425; (D) (AC) F 430
Liquids
Application of Mixing Length Theory to Wary Turbulent Liquid—Gas Interface HT 492
Cooling of Freely Falling Liquid Drops with a Shell of an Immiscible Volatile Liquid HT 508
Prediction of Gaseous Cavitation Occurrence in Various Liquids Based on Two-Phase Flow Analogy F 551
Lisini, G. G. Determination of Balloon Surface in Textile Machines—A Finite Segment Approach I 424
Lisowski, Z. An Analysis of Contact Between a Pair of Surface Asperities During Sliding AM 493
Listvinsky, G. K. Bending and Twisting of Internally Pressurized Thin-Walled Cylinder With Creep (BN) AM 439
Lithium Bromide Absorption
Design Improvements in LiBr Absorption Chillers for Solar Applications SE 56
Little, B. H., Jr. Aerodynamic Effects of Shape, Camber, Pitch, and Ground Proximity on Idealized Ground-Vehicle Bodies F 631; (D) F 637, 638; (AC) F 638
Litvin, F. L. Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) MD 127; (D) (AC) MD 133; A Method of Local Synthesis of Gears Grounded on the Connections Between the Principle and Geodetic Curvatures of Surfaces (80-C2/DET-30) MD 114; Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform"—Part 1. Calculations For Machine Settings For Member Gear

Manufacture of the Formate and Helixform Hypoid Gears (80-C2/DET-31) **MD 83**; Part 2. Machine Setting Calculations for the Pinions of Formate and Helixform Gears **MD 89**; Part 3. Analysis and Optimal Synthesis Methods for Mismatch Gearing and its Application For Hypoid Gears of "Formate" and "Helixform" (80-C2/DET-33) **MD 102**

Liu, H. W. A Design Approach for Correlating High Temperature Fatigue Crack Growth Over a Wide Range of Parameters **MT 246**

Living Tissues

Biomechanics: Mechanical Properties of Living Tissues (BR) **BE 231**

Pulse-Decay Method for Measuring the Thermal Conductivity of Living Tissues **BE 253**

Lloyd, J. R. Experimental Measurements of the Flow-Induced Shear Stress Distribution in the Vicinity of Prosthetic Heart Valves **BE 267**

Lo, K. K. Finite Elastic-Plastic Deformation of a Rotating Hollow Cylinder (BN) **AM 666**

Load Capacity

Calculation of Cylindrical Worm Gear Drives of Different Tooth Profiles (80-C2/DET-23) **MD 73**

Design and Performance of Compliant Thrust Bearings With Spiral-Groove Membranes on Resilient Supports (80-C2/Lub-36) **L 373**; (D) **L 385, 386**; (AC) **L 386**

Load Carrying Capacity

Failure of Thin Film Lubrication—The Effect of Running-In on the Load Carrying Capacity of Thin-Film Lubricated Concentrated Contacts (80-C2/Lub-42) **L 203**; (D) (AC) **L 209**

Load Control

Development of a Procedure for Estimating the High Cycle Fatigue Strength of Some High Temperature Structural Alloys **MT 97**

Load Cycles

Long-Life Fatigue Test Results for Two Nickel-Base Structural Alloys **MT 126**

Load Position

Compliance and Stress Sensitivity of Spur Gear Teeth (80-C2/DET-24) **MD 447**

Load Sharing

Asymptotic Distributions for the Failure of Fibrous Materials Under Series-Parallel Structure and Equal Load-Sharing **AM 75**

Calculation of Contact Ratios for Plastic/Plastic or Plastic/Steel Spur Gear Pairs (80-C2/DET-105) **MD 526**

Loaded Sheet

The Rolling Contact of Two Elastic-Layer-Covered Cylinders Driving a Loaded Sheet in the Nip **AM 589**

Loading

The Effect of a Higher Loading Rate on the J_{Ic} Fracture Toughness Transition Temperature of HY Steels **MT 133**

A New Approach to the Evaluation of Fatigue Under Multiaxial Loadings **MT 118**

A Reinterpretation of the Palmgren-Miner Rule for Fatigue Life Prediction (D) **AM 446**; (AC) **AM 448**

A Statistical Simulation Model of Miner's Rule **MT 112**

Stress Intensity Factors for Corner Cracked Holes Under General Loading Conditions **MT 171**

Loading Surface

Constitutive Equations of Elastoplastic Materials With Anisotropic Hardening and Elastic-Plastic Transition **AM 297**

Loads

An Analytical Solution for the Normal Load Carrying Capacity of Lightly Loaded Cylinders in Combined Rolling, Sliding and Normal Motion (TB) **L 467**

The Effects of Periodic High Loads on Fretting Fatigue **MT 223**

The Efficiency of Involute Spur Gears **MD 160**; (D) (AC) **MD 169**

How to Optimally Support a Plate (BN) **AM 207**

Performance of Computer-Optimized Tapered-Roller Bearings to 2.4 Million DN (80-C2/Lub-18) **L 13**

Locomotives

Fatigue Damage of the Locomotive Suspension Elements Under Random Loading (80-WA/DE-7) **MD 871**

Measurements and Observations on Wheelset Lateral Dynamics of Locomotives on Tangent Track **DS 375**

Loden, W. A. Nonlinear Transient Motion of Deep Ocean Mining Pipe **ERT 2**

Loeffler, A. L., Jr. Flow Field Analysis and Performance of Wind Turbines Employing Slotted Diffusers **SE 17**

Loewenthal, S. H. Constrained Fatigue Life Optimization of a Nasvytis Multiroller Traction Drive (80-C2/DET-78) **MD 423**; (D) **MD 428**; (AC) **MD 429**; Effect of Geometry and Operating Conditions on Spur Gear System Power Loss (80-C2/DET-39) **MD 151**; Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) **MD 410**; (D) **MD 417**; (AC) **MD 420**; Simplified Fatigue Life Analysis for Traction Drive Contacts (80-C2/DET-40) **MD 430**; (D) **MD 438**; (AC) **MD 439**

Löf, G. O. G. Solar Energy Development in the People's Republic of China (Ed) **SE 285**

Logan, E. Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (80-WA/FE-9) **F 97**

Löh, H.-T. On Circular Pipe Wall Vibratory Response Excited by Internal Acoustic Fields (80-WA/NC-13) **I 372**

Long Arc Shrouding

Long Arc Shrouding—A Reliability Improvement for Untuned Steam Turbine Blading (78-JPGC/Pwr-12) **P 522**; (D) **P 527, 528, 530**; (AC) **P 528, 529, 530**

Longcope, D. B. Closed-Form Approximations for Forces on Conical Penetrators Into Dry Porous Rock **AM 971**; A Model to Estimate Forces on Conical Penetrators Into Dry Porous Rock (81-APM-15) **AM 25**

Longitudinal Cracks

Crack Arrest Modes of a Transverse Crack Going Through a Longitudinal Crack or a Hole **MT 177**

Longitudinal Instability

Longitudinal Instability in Braked Landing Gear **DS 259**

Longitudinal Vibration

The Influence of Random Longitudinal Vibration on Channel and Pipe Flows of a Slightly Non-Newtonian Liquid (BN) **AM 661**

Look, D. C. Anisotropic Two-Dimensional Scattering: Comparison of Experiment with Theory **HT 127**

Loud, W. S. *(reviewer)* Methoden der analytischen Störungsrechnung und ihre Anwendunge (BR) **AM 684**

Love, W. J. Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (TB) **PVT 200**; On the Motion of an Axial Through Crack in a Pipe **PVT 281**; A Sensitivity Study on Numerical Analysis of Dynamic Girth Crack Propagation (80-C2/PVP-107) **PVT 169**; The Use of the Split Ring in Modeling Ductile Axial Crack Extension in Pipes **PVT 151**

Low Cycle Fatigue

Low Cycle Fatigue of Commercial Piping Steels in a BWR Primary Water Environment **MT 15**

Low Flow Conditions

Once-Through Cooling Potential of the Middle and Lower Mississippi River During Low Flow Conditions **P 594**

Low Grade Thermal Energy

Analysis and Design of Hybrid Double-Absorption Cooling Systems for Low Grade Thermal Energy Applications (80-WA/HT-44) **SE 331**

Low Reynolds Number

A Theoretical Model for the Transverse Impingement of Free Jets at Low Reynolds Number (D) (AC) **F 374**

Lowell, C. E. Effect of Sodium, Potassium, Magnesium, Calcium, and Chlorine on the High Temperature Corrosion of In-100, U-700, IN-792, and MAR M-509 (80-GT-150) **P 294**

Lowen, G. G. A New Concept for Force Balancing Machines for Planar Linkages. Part 1: Theory (80-DET-73) **MD 637**; Part 2: Application to Four-Bar Linkage and Experiment (80-DET-74) **MD 784**

Lowenthal, S. H. Burt L. Newkirk Award **L 89**

Lower Extremity Injuries

Design of an Actively Controlled Snow Ski Release Binding **BE 138**

Lu, P.-C.

Perturbation Solutions of Transient Heat Transfer to a Porous Medium from a Fluid Stream (79-WA/HT-44) **HT 159**

Luberda, V. A. A Correct Definition of Elastic and Plastic Deformation and Its Computational Significance **AM 35**; (Er) **AM 686**

Lubricants

Calculated and Experimental Data for a 118-mm Bore Roller Bearing to 3 Million DN (80-C2/Lub-14) **L 274**; (D) **L 281**; (AC) **L 283**

Cavitation in a Short Bearing With Pressurized Lubricant Supply (80-C2/Lub-47) **L 337**; (D) **L 346**; (AC) **L 347**

An Experimental Investigation of the Effect of Lubricant Properties on Temperature and Wear in Sliding Concentrated Contacts (80-C2/Lub-1) **L 261**

Failure of Thin Film Lubrication—An Expedient for the Characterization of Lubricants (80-C2/Lub-43) **L 497**; (D) **L 501**; (AC) **L 502**

A Numerical Solution to the Dynamic Load, Film Thickness, and Surface Temperatures in Spur Gears, Part I Analysis **MD 177**; Part II Results **MD 188**; (D) (AC) **MD 194**

On the Traction Behavior of Several Lubricants (80-C2/Lub-15) **L 55**

Lubricating Fluid

A Simple Thermal Correction for Large Spin Traction Curves (80-C2/DET-60) **MD 440**; (D) **MD 445**; (AC) **MD 446**

Lubrication

The Adhesion, Friction, and Wear of Binary Alloys in Contact with Single-Crystal Silicon Carbide (80-C2/Lub-53) **L 180**

An Advanced Apparatus for the Study of Roller and Cage Slip in High-Speed Roller Bearings (80-C2/Lub-2) **L 46**

Analysis of a Hydrodynamic Thrust Bearing With Incomplete Film (80-C2/Lub-27) **L 355**; (D) **L 359, 360**; (AC) **L 360**

Analytical and Experimental Spur Gear Tooth Temperature as Affected by Operating Variables (80-C2/DET-34) **MD 219**

The Behavior of Adhered Fragments Interposed Between Sliding Surfaces and the Formation Process of Wear Particles **L 195**

Calculated and Experimental Data for a 118-mm Bore Roller Bearing to 3 Million DN (80-C2/Lub-14) **L 274**; (D) **L 281**; (AC) **L 283**

Centrifugal Effects in Thrust Bearings and Seals Under Laminar Conditions (80-C2/Lub-21) **L 126**

A Comparison of Film Temperatures and Oil Discharge Temperature for a Tilting-Pad Journal Bearing (80-C2/Lub-37) **L 115**

A Comparison of Multifrequency Techniques for Measuring the Dynamics of Squeeze-Film Bearings (80-C2/Lub-46) **L 137**

Contact Stresses Between Elastic Cylinders: A Comprehensive Theoretical and Experimental Approach (80-C2/Lub-29) **L 40**

Contact Temperature in Dry Bearings. Three Dimensional Theory and Verification (80-C2/Lub-40) **L 243**; (D) (AC) **L 252**

Dynamic Analysis of a Cantilever-Mounted Gas-Lubricated Thrust Bearing (80-C2/Lub-32) **L 157**

Elastohydrodynamic Lubrication of Hypoid Gears (80-C2/DET-47) **MD 195**

Elastohydrodynamic Lubrication of Offset O-Ring Rotary Seal (80-C2/Lub-7) **L 414**; (D) **L 424, 425, 426**; (AC) **L 427**

An Experimental Evaluation of the Hamrock and Dowson Minimum Film Thickness Equation for Fully Flooded EHD Point Contacts (80-C2/Lub-38) **L 284**; (D) **L 294**

An Experimental Investigation of the Effect of Lubricant Properties on Temperature and Wear in Sliding Concentrated Contacts (80-C2/Lub-1) **L 261**

Failure of Thin Film Lubrication—The Effect of Running-In on the Load Carrying Capacity of Thin-Film Lubricated Concentrated Contacts (80-C2/Lub-42) **L 203**; (D) (AC) **L 209**

A Film Thickness Analysis for Line Contacts Under Pure Rolling Conditions With a Non-Newtonian Rheological Model (80-C2/Lub-26) **L 305**; (D) **L 313**; (AC) **L 314**

Fluid-Inertia Effects in Radial Flow Between Oscillating, Rotating Parallel Disks (80-C2/Lub-48) L 144
Friction Between High Speed Gear Coupling Teeth MD 54; (D) (AC) MD 60
Friction—The Present State of Our Understanding L 189
Friction Reduction in Turbulent Journal Bearings by High Polymers (D) L 317
Friction and Wear Results From Sputter-Deposited Chrome Oxide With and Without Nichrome Metallic Binders and Interlayers (80-C2/Lub-49) L 218
Frictional Properties of a Surface Covered with a Soft Metal Film—Part 1: Experiments on Friction Between a Single Protuberance and a Surface L 236
High Speed Testing of the Hollow Roller Bearing (80-C2/Lub-6) L 1
Hydrodynamic Aspects of Fatigue in Plain Journal Bearings (80-C2/Lub-19) L 150
Investigation Into the Influence of Dynamic Forces on the Tribological Behavior of Bodies in Rolling/Sliding Contact With Particular Regard to Surface Corrugations (80-C2/Lub-52) L 26
Lagare Cu Alunecare (Sliding Bearings) (BR) L 319
Line Contact Deformation: A Cylinder Between Two Flat Plates (80-C2/Lub-50) L 21
Measured Characteristics of a Journal Bearing Oil Film (80-C2/Lub-51) L 120
Minimum Load Requirements for the Prevention of Skidding in High Speed Thrust Loaded Ball Bearings (80-C2/Lub-3) L 35
A Model of Lubrication Filtration (80-C2/Lub-20) L 81
Performance of Computer-Optimized Tapered-Roller Bearings to 2.4 Million DN (80-C2/Lub-18) L 13
Prediction of the Operating Temperature of Thrust Bearings (80-C2/Lub-30) L 97
The Role of Elastic Tangential Compliance in Oblique Impact (80-C2/Lub-22) L 74
The Rotational Accuracy Characteristics of the Preloaded Hollow Roller Bearing (80-C2/Lub-23) L 6
Some Experiments on the Steady State Characteristics of a Cylindrical Fluid-Film Bearing Considering Thermal Effects (80-C2/Lub-34) L 107
Some Limitations in Applying Classical EHD Film Thickness Formulas to a High-Speed Bearing (80-C2/Lub-13) L 295; (D) L 301; (AC) L 303
Structural and Compositional Characterization of RF Sputter-Deposited Ni-Cr + Cr_2O_3 Films (80-C2/Lub-31) L 211
Surface Temperatures in Sliding Systems—A Finite Element Analysis (80-C2/Lub-28) L 90
Temperature Gradients Through EHD Films and Molecular Alignment Evidenced By Infrared Spectroscopy (80-C2/Lub-12) L 65
Thermal Deformation in Frictionally Heated Systems (BR) L 164
Thermoelastic and Dynamic Phenomena in Seals (80-C2/Lub-9) L 253
On the Traction Behavior of Several Lubricants (80-C2/Lub-15) L 55
Tribology: Friction, Lubrication, and Wear (BR) L 320
The Wear of a Chromium Carbide Hard Facing: The Effect of High Gas Pressure on Wear Transitions (80-C2/Lub-5) L 228
The Wear Coefficient—Magnitude, Scatter, Uses (80-C2/Lub-4) L 188; (D) L 193; (AC) L 194
The Wear of Polymers Sliding on Polymeric Films Deposited on Rough Surfaces (80-C2/Lub-24) L 266

Lubrication Fundamentals
Lubrication Fundamentals (Mechanical Engineering Series, Vol. 3) (BR) L 471

Lubrication Technology
Analysis of a Hydrodynamic Thrust Bearing With Incomplete Film (80-C2/Lub-27) L 355; (D) L 359, 360; (AC) L 360
An Analysis of Mechanical Face Seal Vibrations (80-C2/Lub-8) L 428; (D) (AC) L 434
Analysis Method for Both Internal Stresses and Microstructural Effect Under Pure Rolling Fatigue Conditions L 521
An Analytical Solution for the Normal Load Carrying Capacity of Lightly Loaded Cylinders in Combined Rolling, Sliding and Normal Motion (TB) L 467
An Analytical Solution for the Thermal Characteristics of Journal Bearings L 443
Antiwear Mechanism of ZDDP in the Presence of Calcium Sulfonate Detergent L 486; (D) L 494, 495; (AC) L 495
A Cavitation Algorithm (80-C2/Lub-54) L 350; (D) (AC) L 354
Cavitation in a Short Bearing With Pressurized Lubricant Supply (80-C2/Lub-47) L 337; (D) L 348; (AC) L 347
Design of Efficient Turbulent Thrust Bearings III. Self-Pressurized Design L 459
Design and Performance of Compliant Thrust Bearings With Spiral-Groove Membranes on Resilient Supports (80-C2/Lub-36) L 373; (D) L 385, 386; (AC) L 386
Dynamic Characteristics of a High-Speed Rotor With Radial and Axial Foil-Bearing Supports (80-C2/Lub-35) L 361; (D) L 370, 371; (AC) L 371
Dynamic Response to Rotating-Seat Runout in Noncontacting Face Seals L 587
Elastohydrodynamic Lubrication of Offset O-Ring Rotary Seal (80-C2/Lub-7) L 414; (D) L 424, 425, 426; (AC) L 427
An Experimental Investigation of the Pressures at the Edge of a Gas Bearing Pocket L 593
Externally Pressurized Two Layer Film Bearing—Gas Bearing With Liquid Layer (80-C2/Lub-41) L 573; (D) (AC) L 577
Failure of Thin Film Lubrication—An Expedient for the Characterization of Lubricants (80-C2/Lub-43) L 497; (D) L 501; (AC) L 502
Fluid-Film Journal Bearings Operating in a Hybrid Mode: Part I—Theoretical Analysis and Design L 558; Part II—Experimental Investigation L 566
Generation of Squeal/Chatter in Water-Lubricated Elastomeric Bearings (80-C2/Lub-45) L 406; (D) (AC) L 413
The History of Tribology in America L 323
Hydrodynamic Lubrication in Wavy Contacting Face Seals—A Two Dimensional Model (80-C2/Lub-10) L 578; (D) (AC) L 586
The Influence of Linear and Rotating Motions on the Friction of Polymers (80-C2/Lub-44) L 503; (D) L 507; (AC) L 508
Inverse Solution of Reynolds' Equation of Lubrication Under Point-Contact Elastohydrodynamic Conditions L 539
The Isothermal Elastohydrodynamic Lubrication of Spheres L 547; (D) (AC) L 557
Lubrication Fundamentals (Mechanical Engineering Series, Vol. 3) (BR) L 471
Lubrication of a Melting Slider Under Nonisothermal Conditions L 436
Mobility and Impedance Definitions for Plain Journal Bearings (TB) L 468
Rheological and Thermal Effects in Lubricated E.H.D. Contacts L 526
Role of Chemistry in the Lubrication of Concentrated Contacts L 473
Rolling Bearing Life Modifying Factors for Film Thickness, Surface Roughness, and Friction (80-C2/Lub-16) L 509; (D) L 516-518; (AC) L 519
Rubber Surface Squeeze Film (80-C2/Lub-33) L 398; (D) (AC) L 404
On the Steady State and Dynamic Performance Characteristics of Floating Ring Bearings (80-C2/Lub-17) L 389; (D) (AC) L 397
Thermal Effects on Traction in EHD Lubrication L 533
On the Thrust Bearing Characteristics in Turbulent Flow L 453

Luh, J. Y. S. Optimum Path Planning for Mechanical Manipulators DS 142

Luk, C. H. Three-Directional Fluid Pool Seismic Sloshing Analysis (80-C2/PVP-49) PVT 10

Lukens, L. L. The Interrelation between Recurrent and Capital Costs in a Solar Thermal Process Heat System SE 241

Lumbar Intervertebral Joints
The Role of Secondary Variables in the Measurement of the Mechanical Properties of the Lumbar Intervertebral Joint BE 129

Lumbar Spine
A Method of Analyzing the Three-Dimensional Stiffness Properties of the Intact Human Lumbar Spine (TB) BE 299

Lumley, J. L. *(reviewer)* Injection and Mixing in Turbulent Flow (BR) AM 986; Turbulence in the Free Atmosphere (BR) AM 988

Lunardini, V. J. Approximate Solution to Neumann Problem for Soil Systems (80-Pet-14) ERT 76; Phase Change around a Circular Cylinder (TN) HT 598; Phase Change Around Insulated Buried Pipes: Quasi-Steady Method ERT 201

Lund, J. W. Centrifugal Effects in Thrust Bearings and Seals Under Laminar Conditions (80-C2/Lub-21) L 126

Lundy, F. E. Torque Characteristics of a 122-Centimeter Butterfly Valve With a Hydro/Pneumatic Actuator F 396

Lungs
The Lung—A Perspective of Biomechanics Development BE 91

Luong, L. H. S. The Role of Microcracks in Large Plastic Deformation I 431

Ly, D. P. Numerical and Experimental Simulations of Pseudoplastic Transient Pipe Flows AM 1

Lyrio, A. A Prediction Method for Planar Diffuser Flows (81-FE-5) F 315

M

M Integral
Nondestructive Evaluation of the *J* and *M* Integrals (81-APM-2) AM 83

Ma, B. M. Pellet-Cladding Interaction of LMFBR Fuel Elements at Unsteady State P 627

Mable, H. H. Technology Transfer in the Determination of Torque Characteristics of R4A Ball Bearings at High Speeds With Radial Load (80-C2/DET-82) MD 264

Macchi, E. Efficiency Prediction for Axial-Flow Turbines Operating with Nonconventional Fluids (81-GT-15) P 718

MacDonald, R. C. Modeling Requirements for Geopressured-Geothermal Reservoir Production ERT 301

Macey, J. P. Optimum Balancing of Combined Pitching and Yawing Moments in High-Speed Machinery (80-DET-7) MD 571

Mach Number
Influence of Mach Number and End Wall Cooling on Secondary Flows in a Straight Nozzle Cascade (80-GT-52) P 257; (D) P 263; (AC) P 264
Two-Dimensional Performance Analysis and Design of MHD Channels F 307

Machine Development
Overview of Wind Energy Systems: Issues in Development and Application SE 3

Machine Dynamics
Design Sensitivity Analysis of Planar Mechanism and Machine Dynamics (80-DET-6) MD 580

Machine Settings
A Method of Local Synthesis of Gears Grounded on the Connections Between the Principal and Geodetic Curvatures of Surfaces (80-C2/DET-30) MD 114; (D) MD 125
Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform"—Part 1. Calculations For Machine Settings for Member Gear Manufacture of the Formate and Helixform Hypoid Gears (80-C2/DET-31) MD 83

Machine Systems
Dynamics of Mechanisms and Machine Systems in Accelerating Reference Frames DS 395

Machine Systems Design
Results of an Industry/University Survey of Machine Systems Design Education MD 687

Machine Tool Systems
Dynamic Analysis of Milling Machine by Torque Signals I 235

Machinery Noise Control
Proceedings of Noise-CON 79, Machinery Control Noise (BR) MD 261

Machining
Abrasive Wear in Machining: Experiments With Materials of Controlled Microstructure MT 151
The Hammer QSD-Quick Stop Device for High Speed Machining and Rubbing (80-WA/PROD-13) I 13
On the Mechanics of Chip Segmentation In Machining

(80-WA/PROD-3) I 33

Machining Centers

Optimum Process Design for a Single-Stage Multifunctional Production System (80-WA/Prod-19) I 218

Machining Constraints

Optimization of Multipass Turning With Constraints I 462

Machining Methods

Tooling Design for ECM—A Finite Element Approach (80-WA/Prod-9) I 183

Maclaine-Cross, I. L. A General Theory of Wet Surface Heat Exchangers and its Application to Regenerative Evaporative Cooling **HT 579**

Macromolecular Permeability

Vesicle Transport in Arterial Endothelium and the Influence of Mechanical Factors on Macromolecular Permeability **BE 186**

Macromolecules

Diffusion of Macromolecules Across the Arterial Wall in the Presence of Multiple Endothelial Injuries **BE 197**

Macroscopic Stresses

A Micromechanical Description of Granular Material Behavior **AM 339**

Msewal, A. Nonlinear Harmonic Oscillations of Gyroscopic Structural Systems and the Case of a Rotating Ring (81-WA/APM-2) **AM 627**

Magi, M. A Simple Thermal Correction for Large Spin Traction Curves (80-C2/DET-60) **MD 440**; (D) **MD 445**; (AC) **MD 448**

Maglev Vehicles

Modeling and Dynamic Response of Maglev Vehicles Subjected to Crosswind Gusts (80-WA/DSC-8) **DS 251**

Magnetohydrodynamic Channels

Two-Dimensional Performance Analysis and Design of MHD Channels **F 307**

Magnetohydrodynamic Generators

Magnetohydrodynamic Boundary Layer on a Wedge (BN) **AM 656**

Maier, G. *(editor)* Engineering Plasticity by Mathematical Programming (BR) **MT 77**

Major, P. U.S. Contour Maps of Annual Energy Delivery by Flat Plate Collectors (TB) **SE 360**

Mak, A. F. Loss of Contact in the Vicinity of a Right-Angle Corner for a Simply Supported, Laterally Loaded Plate (81-WA/APM-11) **AM 597**

Maki, E. R. Optimum Balancing of Combined Pitching and Yawing Moments in High-Speed Machinery (80-DET-7) **MD 571**

Mal, A. K. Diffraction of Elastic Waves by a Surface Crack on a Plate **AM 570**

Malanoski, S. B. Fan/Foundation Interaction—A Simplified Calculation Procedure **P 805**

Malbrancq, J. M. A One-Dimensional Model of Simultaneous Hemodialysis and Ultrafiltration With Highly Permeable Membranes **BE 261**

Malik, M. R. A Study of Some Turbulence Models for Flow and Heat Transfer in Ducts of Annular Cross-Section **HT 146**

Malkin, S. Adaptive Control Optimization of Grinding (80-WA/PROD-12) I 103

Mallik, A. K. Free Vibration of Thin-Walled Open Section Beams With Unconstrained Damping Treatment **AM 169**

Malvern, L. E. *(reviewer)* Mechanical Properties at High Rates of Strain. 1979. Proceedings of the Second Conference on the Mechanical Properties of Materials at High Rates of Strain (BR) **AM 685**

Mandurrago, G. L. Age Softening Characteristics of Annealed 2-1/4 Cr-1 Mo Steel in the Temperature Range 424 to 704 °C **MT 62**

Manion, F. M. Two Decades of Fluidics (F) **DS 299**

Manipulator Systems

Accessible Region and Synthesis of Robot Arms (80-DET-101) **MD 803**

Manipulators

Hybrid Position/ Force Control of Manipulators **DS 126**

A Mathematical Model of Hand Transfer Motion for Application to Manipulator Control **DS 152**

A New Feedback Method for Dynamic Control of Manipulators **DS 119**

One Engineering Concept of Dynamic Control of Manipulators **DS 108**

The Workspaces of a Mechanical Manipulator (80-DET-107) **MD 665**

Mann, R. W. Engineering Design Education: U.S.—Retrospective and Contemporary **MD 696**

Manor, H. Steady Motion of an Elastic Beam Across a Rigid Step (81-WA/APM-7) **AM 606**

Mansfield, E. H. The Annular Membrane Under Axial Load (BN) **AM 975**

Manufacturing Processes

Folding of Elastica-Similarity Solutions (BN) **AM 199**

Manufacturing Research

Manufacturing Systems Engineering (BR) **DS 423**

Manzoor, M. The Effects of Nonuniform Heat Transfer from an Annular Fin of Triangular Profile (TN) **HT 184**

Margetson, J. A Criterion for Plastic Failure of Notched High Strength Steel Structures **MT 142**

Mariamy, Y. A. Dynamic Response of a Beam With a Geometric Nonlinearity **AM 404**

Marine Gas Turbines

The Control of Hot Corrosion in Marine Gas Turbines (80-GT-126) **P 188**

Marine Pipelaying

A Three-Dimensional Geometrically Nonlinear Analysis of Pipelaying in an Ocean Environment (TB) **PVT 201**

Marine Pipes

Finite Element Analysis With the State Variable Transfer Matrix and Geometric Nonlinearity for Marine Pipelines in Subsurface Tow (80-Pet-47) **ERT 26**

Marine Pipelines

Vibrations of Long Marine Pipes due to Vortex Shedding (81-Pet-29) **ERT 231**

Mark, F. F. Correlation of Human Arterial Morphology with Hemodynamic Measurements in Arterial Casts **BE 204**

Markho, P. H. An Advanced Apparatus for the Study of Roller and Cage Slip in High-Speed Roller Bearings (80-C2/Lub-2) **L 48**

Marriott, D. L. *(reviewer)* Creep Analysis (BR) **AM 451**

Marrucci, G. *(editor)* Rheology (BR) **AM 450**

Martin, C. S. Cavitation Inception in Spool Valves **F 564**; (D) **F 575**; (AC) **F 576**

Martin, F. A. Analysis of a Hydrodynamic Thrust Bearing With Incomplete Film (80-C2/Lub-27) **L 355**; (D) **L 359, 360**; (AC) **L 360**; Hydrodynamic Aspects of Fatigue in Plain Journal Bearings (80-C2/Lub-19) **L 150**

Martin, H. R. Passive Acoustic Detection of Gas Leaks in Buried Pipes (80-WA/NC-17) I 314

Martin, J. M. Antiwear Mechanism of ZDDP in the Presence of Calcium Sulfonate Detergent **L 486**; (D) **L 494, 495**; (AC) **L 495**

Martin, J. W. Field Results From a Linked Vertical Well UCG Test in Deep, Thin-Seam Bituminous Coal **ERT 277**

Martin, K. F. The Efficiency of Involute Spur Gears **MD 160**

Marui, E. Frictional Properties of a Surface Covered With a Soft Metal Film—Part 1: Experiments on Friction Between a Single Protuberance and a Surface **L 236**

Mashburn, W. H. Design Technology Transfer Conference, review (CR) **MD 259**

Masllysh, J. H. Steady Laminar Flow through Twisted Pipes. Fluid Flow in Square Tubes **HT 785**; Steady Laminar Flow Through Twisted Pipes. Heat Transfer in Square Tubes **HT 791**

Masory, O. Reference-Pulse Circular Interpolators for CNC Systems (80-WA/PROD-7) I 131

Masri, S. F. Analytical/Experimental Correlation of a Nonlinear System Subjected to a Dynamic Load **PVT 94**; Dynamic Response of a Beam With a Geometric Nonlinearity **AM 404**; Optimum Pulse Control of Flexible Structures **AM 619**

Mass Elements

The Simultaneous Analytical Synthesis of Mass and Spring Elements in Planar Mechanisms (80-DET-50) **MD 758**

Mass Flow Rates

Performance Characteristics of a Thermosyphon Solar Domestic Hot Water System **SE 193**

Mass Transfer

Droplet Evaporation in High Temperature Environments (79-WA/HT-6) **HT 88**

An Exact Solution of the Sublimation Problem in a Porous Medium **HT 165**

Pioneering Contributions to Our Knowledge of Convective Heat Transfer (80-HT-137) **HT 409**

Prediction of Growth Parameters of Frost Deposits in Forced Convection **HT 3**

Reflections on the History of Heat and Mass Transfer in Bioengineering **BE 97**

Massoud, M. Design Nomographs of Compression Helical Springs for Predetermined Reliability Levels (80-C2/DET-85) **MD 268**

Masterson, D. M. Experimental Study on Moving Loads on a Floating Sea Ice Road **ERT 96**

Matanzo, F., Jr. Efficiency of Wire Rope Terminations **MT 164**

Material Life

Methods of Predicting Material Life in Fatigue (Ed) **MT 81**

Material Nonlinearity

Analytical/Experimental Correlation of a Nonlinear System Subjected to a Dynamic Load **PVT 94**

Material Properties

Material Property Data and Their Use in Design and Analysis for an Elevated Temperature Solar Code **SE 345**

Material Resources

Materials in World Perspective (BR) **MT 78**

Materials Technology

Abrasive Wear in Machining: Experiments With Materials of Controlled Microstructure **MT 151**

Age Softening Characteristics of Annealed 2-1/4 Cr-1 Mo Steel in the Temperature Range 424 to 704°C **MT 62**

An Analysis of Grain Size and Yield Stress Effects on Stress at Fatigue Limit and Threshold Stress Intensity Factor **MT 229**

Application of Finite Element Calculations to Residual Stress Measurements **MT 157**

A Comparison of Constitutive Relations Incorporating Strain-Rate Hardening (TB) **MT 261**

Complete Numerical Solution of the Axisymmetrical Deep-Drawing Problem (81-WA/Mat-1) **MT 326**

Crack Arrest Modes of a Transverse Crack Going Through a Longitudinal Crack or a Hole **MT 177**

The Creep Rupture Properties of ASME SA 516 (Grade 55) Steel in the Range 426°C to 872°C **MT 253**

A Criterion for Low-Cycle Fatigue Failure Under Biaxial States of Stress **MT 1**

A Criterion for Plastic Failure of Notched High Strength Steel Structures **MT 142**

A Critical Analysis of Crack Growth in Creep (D) (AC) **MT 264, 265**

A Damage Accumulation Model for Fatigue Crack Propagation **MT 293**

A Design Approach for Correlating High Temperature Fatigue Crack Growth Over a Wide Range of Parameters **MT 246**

Development of a Procedure for Estimating the High Cycle Fatigue Strength of Some High Temperature Structural Alloys **MT 97**

Ductile Tearing Instability of a Center-Cracked Panel of an Elastic-Plastic Strain Hardening Material **MT 46**

Dynamic Analysis of a Torsion Test Specimen Including Heat Conduction and Plastic Flow **MT 201**

The Effect of a Higher Loading Rate on the J_{Ic} Fracture Toughness Transition Temperature of HY Steels **MT 133**

The Effect of Product Form Upon Fatigue-Crack Growth Behavior in Alloy 718 (81-Mat-1) **MT 234**

The Effects of Periodic High Loads on Fretting Fatigue **MT 223**

Efficiency of Wire Rope Terminations **MT 164**

Endochronic Description of Cyclic Hardening Behavior for Metallic Materials **MT 212**

Engineering Plasticity by Mathematical Programming (BR) **MT 77**

The Equivalence of the Final Stretch and Crack Tip Opening Angle Criteria for Plane Strain Crack Growth **MT 148**

Evaluation of Radiation Damage in Reactor Pressure Vessel Steel by Elastic-Plastic Fracture Mechanics **MT 276**

An Explanation for the Effects of Hold Periods on the Elevated Temperature Fatigue Behavior of 2 1/4 Cr-1 Mo Steel **MT 7**

Fatigue Crack Growth Behavior of Explosively-Bonded

Clad Steel Plates MT 36
Fatigue Criteria Under Combined Stresses or Strains MT 82
Fatigue Life Predictions of Smooth and Notched Specimens Based on Fracture Mechanics MT 91
The Fatigue and Toughness Properties of a C-Mn-Cb Plate Steel (Er) MT 263
Fatigue of Welded Structures (BR) MT 185
Flow Stresses of Prestrained Annealed OFHC Copper and SAE 1018 Steel MT 188
Fracture Mechanics (BR) MT 77
Fracture Toughness of 4130 Quenched and Tempered Steel MT 55
Fracture and Wear of Diamond Cutting Tools (81-WA/Mat-3) MT 341
Glass Reinforced Plastic in Construction: Engineering Aspects By Leonard Halloway (BR) MT 78
Long-Life Fatigue Test Results for Two-Nickel-Base Structural Alloys MT 126
Low Cycle Fatigue of Commercial Piping Steels in a BWR Primary Water Environment MT 15
Materials for Generator Retaining Rings MT 267
Materials in World Perspective (BR) MT 78
Measuring the Actual Endurance Limit of One Specimen Using a Nondestructuve Method MT 71
Metal Fatigue in Engineering (1980) (BR) MT 346
Metallic Materials Specification Handbook (BR) MT 347
Methods of Predicting Material Life in Fatigue (Ed) MT 81
Multispecimen Fatigue Crack Propagation Testing MT 240
A New Approach to the Evaluation of Fatigue Under Multiaxial Loadings MT 118
A New Parameter for Characterizing Corrosion Fatigue Crack Growth MT 298
A Phenomenological Model for Transient Deformation Based on State Variables MT 314
On the Physical Basis of Auerbach's Law (TB) MT 183
Plastic Deformation Behavior of Mild Steel Along Orthogonal Trilinear Strain Trajectories in Three-Dimensional Vector Space of Strain Deviator MT 287
A Plastic Fracture Instability Analysis of Wall Breakthrough in a Circumferentially Cracked Pipe Subjected to Bending Loads MT 194
A Review of the Recent Literature on the Unlubricated Sliding Wear of Dissimilar Metals (81-WA/Mat-2) MT 333
Small Crack Behavior and the Prediction of Fatigue Life MT 26
A State Variable Analysis of Inelastic Deformation of Thin Walled Tubes MT 305
A Statistical Simulation Model of Miner's Rule MT 112
A Statistically Based Investigation of the Environmental and Cyclic Stress Effects on Fretting Fatigue MT 218
Strength of the Surface Layer of Mild Steel MT 282
Stress Intensity Factors for Corner Cracked Holes Under General Loading Conditions MT 171
Strong Tough HSLA Steels Via Processing and Heat Treating of Cu-Ni-Cb and Cu-Ti-B Compositions MT 207
Threshold and Low-Rate Fatigue Crack Growth of a NiMoV Rotor Steel MT 104
Matharu, D. S. The Hybrid Diffuser (80-GT-136) P 229

Mathematical Model
A Mathematical Model of Hand Transfer Motion for Application to Manipulator Control DS 152
A Mathematical Model for the Stirling Engine Cycle P 505
Modeling of Hydraulically Fractured Gas Wells Completed in Noncontinuous Lenticular Formations ERT 153

Mathematical Programming
Engineering Plasticity by Mathematical Programming (BR) MT 77

Mating Teeth
Conformity Factor in Wildhaber-Novikov Circular-Arc Gears (80-C2/DET-15) MD 134

Matsch, L. Design and Performance of Compliant Thrust Bearings With Spiral-Groove Membranes on Resilient Supports (80-C2/Lub-36) L 373; (D) L 385, 386; (AC) L 386

Matsuda, S. NO_x Removal Process by Injection of NH_3 and H_2O_2 in Gas Turbine Exhaust Gas P 589

Matsunaga, T. Tooth Bearing Analysis and Surface Durability of Symmetrical Conformal Gears MD 141

Matsuzaki, Y. Reexamination of Stability of a Two-Dimensional Finite Panel Exposed to an Incompressible Flow AM 472

Matthew, G. K. The Simultaneous Analytical Synthesis of Mass and Spring Elements in Planar Mechanisms (80-DET-50) MD 758

Maw, N. The Role of Elastic Tangential Compliance in Oblique Impact (80-C2/Lub-22) L 74

Mayo, W. T., Jr. Optical Advances in Laser Transit Anemometry P 438

Mazzawy, R. S. Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) F 391; (D) (AC) F 395

McBride, D. D. Mean Wind Loading on Parabolic-Trough Solar Collectors SE 313

McCarthy, J. M. The Curvature Theory of Line Trajectories in Spatial Kinematics (80-DET-18) MD 718

McClamrock, N. H. (*author*) State Models of Dynamic Systems: A Case Study Approach (BR) DS 297

McClung, J. D. Field Results From a Linked Vertical Well UCG Test in Deep, Thin-Seam Bituminous Coal ERT 277

McCreath, C. G. The Control of Hot Corrosion in Marine Gas Turbines (80-GT-126) P 188

McDonald, C. F. The Nuclear Closed-Cycle Gas Turbine (HTGR-GT)—Dry Cooled Commercial Power Plant Studies (80-GT-82) P 89; Turbomachinery Design Considerations for the Nuclear HTGR-GT Power Plant (80-GT-80) P 65

McGowan, J. J. A Design Approach for Correlating High Temperature Fatigue Crack Growth Over a Wide Range of Parameters MT 246

McGuire, P. A. A Computational Model for Improving Weld Residual Stresses in Small Diameter Pipes by Induction Heating (80-C2/PVP-152) PVT 294

McMurrin, J. C. Design Optimization for Sinusoidal Glass Honeycomb for Flat Plate Solar Collectors SE 268

Mean Flow Quantities
A Four Hole Pressure Probe for Fluid Flow Measurements in Three Dimensions F 590

Mean Pressure
On the Mean Reynolds Equation in the Presence of Surface Roughness: Squeeze-Film Bearing AM 717

Mean-Velocity Ratios
Initial Region of Subsonic Coaxial Jets of High Mean-Velocity Ratio F 335

Measured Characteristics
Measured Characteristics of a Journal Bearing Oil Film (80-C2/Lub-51) L 120

Measurement System
Laser-Optical Blade Tip Clearance Measurement System P 457

Measurements
Conventional Probes for the Relative Flow Measurement in a Turbomachinery Rotor Blade Passage P 406
Experimental Analysis Methods for Unsteady Flows in Turbomachines P 415
Flutter Spectral Measurements Using Stationary Pressure Transducers P 461
Laser Anemometer Measurements in a Transonic Axial Flow Compressor Rotor P 430
Mean Flow Measurements Near the Plane of an Open Rotor Operating with an Inlet Velocity Gradient P 445
Measurement Methods in Rotating Components of Turbomachinery P 373
Measurements of Turbine Rotor Blade Flows P 400
Techniques for Aerodynamic and Turbulence Measurements in Turbomachinery Rotors P 374

Mechanical Design
Accessible Region and Synthesis of Robot Arms (80-DET-101) MD 803
Adaption of Continuously Variable Transmissions to the Characteristic of a Driven Machine by Bicoupled Planetary Transmissions (80-C2/DET-92) MD 41
Analysis and Design of a Uniform-Clearance, Pumping-Ring Rod Seal for the Stirling Engine MD 67
Analysis of Linear Dynamics Systems (BR) MD 262
On the Analysis of Uniform Prismatic Columns (80-C2/DET-113) MD 274
The Analytical and Experimental Evaluation of Resonant Response in High-Speed, Lightweight, Highly Loaded Gearing (80-C2/DET-22) MD 346
Analytical and Experimental Spur Gear Tooth Temperature as Affected by Operating Variables (80-C2/DET-34) MD 219
The Application of Finite Element Methods to the Dynamic Analysis of Flexible Spatial and Co-Planar Linkage Systems (80-DET-87) MD 643
Application of Orthotropic Plate Theory to Windmill Blade Design MD 892
16th ASME Mechanisms Conference (CR) MD 550
Assessment of the Dynamic Quality of a Class of Dwell-Rise Dwell Cams (80-DET-83) MD 793
The Balancing of Rotating Shafts by Quadratic Programming (80-DET-45) MD 831
Bending Fatigue Tests of High Speed Spur Gears (80-C2/DET-87) MD 466
Calculating Natural Frequencies With Extended Tuplin's Method (80-C2/DET-48) MD 379
Calculation of Contact Ratios for Plastic/Plastic or Plastic/Steel Spur Gear Pairs (80-C2/DET-105) MD 528
Calculation of Cylindrical Worm Gear Drives of Different Tooth Profiles (80-C2/DET-23) MD 73
A Classification of Coupler-Line Envelopes from Hinged Four-Bar Linkages (80-DET-42) MD 750
Closure Equations for a Six-Link Coupler-Drive Mechanism MD 236
A Comparison Between Trochoidal, Rotary Vane and Reciprocating Expanders (80-C2/DET-81) MD 304
Compliance and Stress Sensitivity of Spur Gear Teeth (80-C2/DET-24) MD 447
Conformity Factor in Wildhaber-Novikov Circular Arc Gears (80-C2/DET-15) MD 134
Constrained Fatigue Life Optimization of a Nasvytis Multiroller Traction Drive (80-C2/DET-78) MD 423; (D) MD 428; (AC) MD 429
Contact Stress Between Rollers With Surface Irregularity (80-C2/DET-10) MD 492
Current Trends in the Design of Mechanisms MD 549
The Curvature Theory of Line Trajectories in Spatial Kinematics (80-DET-18) MD 718
Design of Aluminum Bicycle Frames MD 901
Design and Evaluation of Drag-Link Driven Cams (80-DET-38) MD 592
Design Formulas for Expansion Bellows MD 881
Design Nomographs of Compression Helical Springs for Predetermined Reliability Levels (80-C2/DET-85) MD 268
Design Sensitivity Analysis of Planar Mechanism and Machine Dynamics (80-DET-6) MD 560
Design Technology Committee Overview (Ed) MD 257
Design Technology Transfer Conference, review (CR) MD 259
Determination of Extreme Distances of a Robot Hand—Part 1 A General Theory (80-DET-57) MD 631; Part 2: Robot Arms With Special Geometry (80-DET-58) MD 776
The Development of a Perbury Traction Transmission for Motor Car Applications (80-C2/DET-59) MD 29
A Direct Integration Technique for the Transient Analysis of Rotating Shafts MD 244
A Dynamic Absorber for Gear Systems Operating in Resonance and Instability Regions (80-C2/DET-7) MD 364
Dynamic Continuous Path Synthesis of Industrial Robots Using ADAMS Computer Program (80-DET-41) MD 602
On the Dynamic Simulation of Large Nonlinear Mechanical Systems. Part 1: An Overview of the Simulation Technique. Substructuring and Frequency Domain Considerations (80-DET-66) MD 849; Part 2: The Time Integration Technique and Time Response Loop (80-DET-67) MD 857
Dynamic System Response Technology Transfer Via Computer Modeling (80-C2/DET-80) MD 281
Effect of Asperity Interaction on Pitting in Rollers and Gears (80-C2/DET-36) MD 482

Effect of Geometry and Operating Conditions on Spur Gear Systems Power Loss (80-C2/DET-39) **MD 151**
Effect of Molecular Weight Distribution of Mineral Oil on Tribofailure of Spur Gears **MD 210**
Effects of Case Depth and Relative Radius of Curvature on Surface Durability of Case-Hardened Chromium Molybdenum Steel Roller (80-C2/DET-37) **MD 474**
Effects of Hunting Gear Ratio Upon Surface Durability of Gear Teeth (80-C2/DET-35) **MD 227**
Effects of Moving Speeds of Dynamic Loads on the Deflections of Gear Teeth **MD 357**
The Efficiency of Involute Spur Gears **MD 160**
Elastohydrodynamic Lubrication of Hypoid Gears (80-C2/DET-47) **MD 195**
Elementary Finite Element Method (BR) **MD 685**
Endurance and Failure Characteristics of Modified Vasco X-2, CBS 600 and AISI 9310 Spur Gears (80-C2/DET-58) **MD 506**; (D) **MD 514**; (AC) **MD 514, 515**
Engineering Design Education: U.S.—Retrospective and Contemporary **MD 696**
Equations for Four-Bar Line-Envelopes (80-DET-40) **MD 743**; (D) (AC) **MD 749**
Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) **MD 410**; (D) **MD 417**; (AC) **MD 420**
An Exact Condensation Procedure for Chain-Like Structures Using a Finite Element-Transfer Matrix Approach (80-C2/DET-123) **MD 295**
An Extended Model for Determining Dynamic Loads in Spur Gearing (80-C2/DET-90) **MD 398**
An Extension of Screw Theory (80-DET-20) **MD 725**
Factors Affecting Fatigue Strength of Nylon Gears (80-C2/DET-104) **MD 543**
Factors Influencing Instability and Resonances in Geared Systems (80-C2/DET-8) **MD 372**
Fatigue Damage of the Locomotive Suspension Elements Under Random Loading (80-WA/DE-7) **MD 871**
Finite Element Analysis of Hydraulic Cylinders (80-DE-3) **MD 239**
Friction Between High Speed Gear Coupling Teeth (80-C2/DET-5) **MD 54**
On Functionality of a New Mechanical Hand (80-C2/DET-124) **MD 277**
Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) **MD 127**
Implementation of Solution Rectification Techniques in an Interactive Linkage Synthesis Program (80-DET-91) **MD 657**
Instantaneous Kinematics of Multiple-Degree-of-Freedom Motions (80-DET-53) **MD 606**
An International Survey of Shock and Vibration Technology (BR) **MD 685**
International Technology Transfer—Who Should Learn the Second Language? (80-C2/DET-83) **MD 335**
Kinematic Analysis of Spatial Mechanisms Using Train Components **MD 823**
Kinematic Efficiency of Non-Circular Geared Transmissions **MD 170**
Kinematic Mappings. Part 1: Classification of Algebraic Motions in the Plane (80-DET-16) **MD 585**; Part 2: Rational Algebraic Motions in the Plane (80-DET-17) **MD 712**
Linkage Characteristic Polynomials: Definitions, Coefficients by Inspection (80-DET-8) **MD 578**
Mathematical Formulation of Cooling Water Flow Rates for High Speed Continuous Slab Caster (80-C2/DET-111) **MD 318**
Mathematical Model for Design Conditions for Cooling Load Calculations (80-C2/DET-122) **MD 328**
A Method of Local Synthesis of Gears Grounded on the Connections Between the Principal and Geodetic Curvatures of Surfaces (80-C2/DET-30) **MD 114**
Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform"—Part 1. Calculations For Machine Settings For Member Gear Manufacture of the Formate and Helixform Hypoid Gears (80-C2/DET-31) **MD 83**; Part 2. Machine Setting Calculations for the Pinions of Formate and Helixform Gears **MD 89**; Part 3. Analysis and Optimal Synthesis Methods For Mismatch Gearing and its Application For Hypoid Gears of "Formate" and "Helixform" (80-C2/DET-33) **MD 102**
Minimum Energy-Loss Control of Electro-and Hydro-Mechanical Modulated Convertor Drives (80-C2/DET-42) **MD 48**
A Modern Course in Aeroelasticity (BR) **MD 261**
Moments Between Impacting Rigid Bodies **MD 812**
A New Concept for Force Balancing Machines for Planar Linkages. Part 1: Theory (80-DET-73) **MD 637**; Part 2: Application to Four-Bar Linkage and Experiment (80-DET-74) **MD 784**
A New Solution to Coulomb Friction in Mechanism Bearings: Theory and Application (80-DET-52) **MD 784**
Numerical Implementation of Complex Potentials for Gear Tooth Stress Analysis (80-C2/DET-86) **MD 460**
A Numerical Solution to the Dynamic Load, Film Thickness, and Surface Temperatures in Spur Gears, Part I Analysis **MD 177**; Part II Results **MD 188**
Optimization of High Speed Geneva Mechanisms (80-DET-56) **MD 621**
The Optimization Problem With Optimal Tolerance Assignment and Full Acceptance (80-DET-47) **MD 842**
Optimum Balancing of Combined Pitching and Yawing Moments in High-Speed Machinery (80-DET-7) **MD 571**
Optimum Design of an Abrasive Disk **MD 818**
Optimum Vibration Absorbers for Linear Damped Systems **MD 908**
On Predicting Vibrations in Realistically Proportioned Linkage Mechanisms (80-DET-4) **MD 706**
On the Principle of Transference In Three-Dimensional Kinematics (80-DET-88) **MD 652**
Probabilistic Models in Computer Automated Slider-Crank Function Generator Design (80-DET-46) **MD 835**
Proceedings of Noise-CON 79, Machinery Control Noise (BR) **MD 261**
Quasi-Square Hole With Optimum Shape in an Infinite Plate Subjected to In-Plane Loading (80-WA/DE-3) **MD 866**
Rating Gear Strength (80-C2/DET-88) **MD 516**
Residual Vibration Criteria Applied to Multiple Degree of Freedom Cam Followers (80-DET-3) **MD 702**
Resonances and Instabilities in Dynamic Systems Incorporating a Cam **MD 914**
Results of an Industry/University Survey of Machine Systems Design Education **MD 687**
Roller Chain as a Transfer Drive for the Automoblie **MD 19**
Rotating Elasto-plastic Interference Fits (80-C2/DET-11) **MD 61**
Rotational Vibration With Backlash—Part 2 (80-C2/DET-61) **MD 387**
A Simple Thermal Correction for Large Spin Traction Curves (80-C2/DET-60) **MD 440**; (D) **MD 445**; (AC) **MD 446**
Simplified Fatigue Life Analysis for Traction Drive Contacts (80-C2/DET-40) **MD 430**; (D) **MD 438**; (AC) **MD 439**
Simulation of Hertzian Contacts Found in Spur Gears with a High Performance Disk Machine **MD 204**
The Simultaneous Analytical Synthesis of Mass and Spring Elements in Planar Mechanisms (80-DET-50) **MD 758**
Some Factors Influencing the Pitting, Micro-Pitting (Frosted Areas) and Slow Speed Wear of Surface Hardened Gears (80-C2/DET-89) **MD 469**
Some Notes on V-Belt Drives (80-C2/DET-91) **MD 8**
Stress Analysis of Axisymmetric Rotating Disks (TB) **MD 922**
Stress Fluctuation in High Speed Mechanisms (80-DET-21) **MD 736**
Structural Confinement and Safety Design of a Fast Reactor Core (80-C2/DET-112) **MD 289**
Structural Mechanics Softwear Series—Vol. II (BR) **MD 858**
Study on Vibratory Feeders: Calculation of Natural Frequency of Bowl-Type Vibratory Feeders **MD 249**
Technology Transfer in the Determination of Torque Characteristics of R4A Ball Bearings at High Speeds With Radial Load (80-C2/DET-82) **MD 264**
Thermal and Thermoelastic Analysis of Spheroidal Graphite Cast Iron and Light Alloy Pistons **MD 895**
Thermodynamics of a Hermetic Reciprocating Refrigeration Compressor With MCCT-Piston and Valve System (80-C2/DET-84) **MD 310**
Tooth Bearings Analysis and Surface Durability of Symmetrical Conformal Gears **MD 141**
The Workspaces of a Mechanical Manipulator (80-DET-107) **MD 665**
Writing for "The Audience" (80-C2/DET-125) **MD 342**

Mechanical Engineers
Dynamic System Response Technology Transfer Via Computer Modeling (80-C2/DET-80) **MD 281**

Mechanical Face Seals
An Analysis of Mechanical Face Seal Vibrations (80-C2/Lub-8) **L 428**; (D) (AC) **L 434**

Mechanical Hand
On Functionality of a New Mechanical Hand (80-C2/DET-124) **MD 277**

Mechanical Manipulators
Analysis of Mechanisms and Robot Manipulators (BR) **AM 214**
Optimum Path Planning for Mechanical Manipulators **DS 142**
The Workspaces of a Mechanical Manipulator (80-DET-107) **MD 665**

Mechanical Properties
Biomechanics: Mechanical Properties of Living Tissues (BR) **BE 231**
Mechanical Properties at High Rates of Strain. 1979. Proceedings of the Second Conference on the Mechanical Properties of Materials at High Rates of Strain (BR) **AM 685**
The Role of Secondary Variables in the Measurement of the Mechanical Properties of the Lumbar Intervertebral Joint **BE 129**

Mechanism Systems
On the Dynamic Simulation of Large Nonlinear Mechanical Systems. Part 1: An Overview of the Simulation Technique. Substructuring and Frequency Domain Considerations (80-DET-66) **MD 849**; Part 2: The Time Integration Technique and Time Response Loop (80-DET-67) **MD 857**
Stress Fluctuation in High Speed Mechanisms (80-DET-21) **MD 736**

Mechanics
Analysis and Performance of Fiber Composites (BR) **AM 213**

Mechanism Bearings
A New Solution to Coulomb Friction in Mechanism Bearings: Theory and Application (80-DET-52) **MD 784**

Mechanisms
16th ASME Mechanisms Conference (CR) **MD 550**
Current Trends in the Design of Mechanisms **MD 549**
Dynamics of Mechanisms and Machine Systems in Accelerating Reference Frames **DS 395**

Medial Collateral Ligament
The Time and History-Dependent Viscoelastic Properties of the Canine Medial Collateral Ligament **BE 293**

Medlarz, H. Cavitation Inception in Spool Valves **F 564**; (D) **F 575**; (AC) **F 576**

Mehrabadi, M. M. A Micromechanical Description of Granular Material Behavior **AM 339**

Mehringer, F. J. Long-Life Fatigue Test Results for Two Nickel-Base Structural Alloys **MT 126**

Melling, A. Flow Instability at the Inlet of a Centrifugal Compressor **P 451**

Melting
Heat Transfer and Interface Motion During Melting and Solidification around a Finned Heat Source/Sink (80-HT-10) **HT 720**
Melting of a Vertical Ice Wall by Free Convection into Fresh Water **HT 13**

Melting Slider
Lubrication of a Melting Slider Under Nonisothermal Conditions **L 436**

Membranes
Large Plane-to-Surface Deformations of Membranes With Inclusion **AM 357**

Merkle, J. G. Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) **PVT 85**

Merte, H. Prediction of Transient Inception of Boiling in Terms of a Heterogeneous Nucleation

Theory (80-HT-113) HT 69; Semi-Transparent Gold Film as Simultaneous Surface Heater and Resistance Thermometer for Nucleate Boiling Studies HT 65

Meshing
A Method of Local Synthesis of Gears Grounded on the Connections Between the Principal and Geodetic Curvatures of Surfaces (80-C2/DET-30) MD 114
Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform"—Part 3. Analysis and Optimal Synthesis Methods for Mismatch Gearing and its Application For Hypoid Gears of "Formate" and "Helixform" (80-C2/DET-33) MD 102

Metal Combinations
The Wear Coefficient—Magnitude, Scatter, Uses (80-C2/Lub-4) L 188; (D) L 193; (AC) L 194

Metal Cutting
Quantitative Relationships for Acoustic Emission from Orthogonal Metal Cutting I 330

Metal Cutting Dynamics
A Data Dependent Systems Approach to Dynamics of Surface Generation in Turning I 437

Metal Fatigue
Metal Fatigue in Engineering (1980) (BR) MT 346

Metal Liner
Dynamic Analysis of Explosive-Metal Interaction in Three Dimensions AM 30

Metal Plates
Analytical Puncture Study of Circular Metal Plates (D) PVT 206

Metallic Binders
Structural and Compositional Characterization of RF Sputter-Deposited Ni-Cr + Cr_2O_3 Films (80-C2/Lub-31) L 211

Metallic Driver Fuel
EBR-II Metallic Driver Fuel—A Live Option (80-C2/NE-23) P 612

Metallic Materials
Endochronic Description of Cyclic Hardening Behavior for Metallic Materials MT 212
Metallic Materials Specification Handbook (BR) MT 347

Metallic Surfaces
A Method to Measure Contact Pressure Between Metallic Surfaces by Changes in Surface Roughness (80-WA/Prod-18) I 210

Metallurgy
Dislocation in Solids: Dislocations in Metallurgy (BR) AM 451

Metals
Self-Consistent Determination of Time-Dependent Behavior of Metals (81-APM-11) AM 41
A Self-Consistent Scheme for the Relaxation Behavior of Metals (81-WA/APM-14) AM 779
Metcalf, J. T., Jr. Efficiency of Wire Rope Terminations MT 164
Metcalfe, R. An Analysis of Mechanical Face Seal Vibrations (80-C2/Lub-8) L 428; (D) (AC) L 434

Methane Gas
Field Results From a Linked Vertical Well UCG Test in Deep, Thin-Seam Bituminous Coal ERT 277

Methanol-Coal Slurries
Laminar-Turbulent Transition in Pipeflow of Casson Model Fluids ERT 318
Metzger, D. E. The Effect of Crossflow at the Entrance on Heat Transfer Enhancement in Tubes (TN) HT 178
Metzger, N. *(editor)* Issues and Current Studies (BR) BE 217

MHD Generators
Performance of a Multiphase Boiling MHD Generator P 582
Michael, W. The Optimization Problem With Optimal Tolerance Assignment and Full Acceptance (80-DET-47) MD 842
Michaelides, E. E. The Effect of Magnus Force on the Scale Deposition in Geothermal Systems (TB) ERT 352

Micro Hydroelectric Plants
Small and Micro Hydroelectric Plants (BR) F 484

Microbubbles
On the Equilibrium of Cavitation Nuclei in Liquid-Gas Solutions F 425; (D) (AC) F 430
The Initiation of Gaseous Microbubble Growth in Laminar Separation Bubbles F 543; (D) (AC) F 549

Microconvection
Microconvective Thermal Conductivity in Disperse Two-Phase Mixtures as Observed in a Low Velocity Couette Flow Experiment HT 47

Microcracking
Small Crack Behavior and the Prediction of Fatigue Life MT 26

Microcracks
The Role of Microcracks in Large Plastic Deformation I 431

Micromechanical Description
A Micromechanical Description of Granular Material Behavior AM 339

Micromechanical Oscillators
Micromechanical Oscillators and Techniques for Determining the Dynamic Moduli of Microsamples of Human Cortical Bone at Microstrains BE 146

Microphones
Analytical Modeling of Wave Interference Directional Microphones (80-WA/NC-6) I 381
Passive Acoustic Detection of Gas Leaks in Buried Pipes (80-WA/NC-17) I 314

Micro-Pitting
Some Factors Influencing the Pitting, Micro-Pitting (Frosted Areas) and Slow Speed Wear of Surface Hardened Gears (80-C2/DET-89) MD 499

Microsamples
Micromechanical Oscillators and Techniques for Determining the Dynamic Moduli of Microsamples of Human Cortical Bone at Microstrains BE 146

Microstructural Changes
Analysis Method for Both Internal Stresses and Microstructural Effect Under Pure Rolling Fatigue Conditions L 521
The Creep Rupture Properties of ASME SA 516 (Grade 55) Steel in the Range 426°C to 872°C MT 253

Microstructure
A Statistical Investigation of Microstructure and Crack Growth in Titanium Alloys (80-GT-125) P 180

Mild Steel
Plastic Deformation Behavior of Mild Steel Along Orthogonal Trilinear Strain Trajectories in Three-Dimensional Vector Space of Strain Deviator MD 287
Strength of the Surface Layer of Mild Steel MT 282
Milios, J. Crack Arrest Modes of a Transverse Crack Going Through a Longitudinal Crack or a Hole MT 177
Miller, A. K. An Explanation for the Effects of Hold Periods on the Elevated Temperature Fatigue Behavior of 2¼ Cr-1 Mo Steel MT 7
Miller, B. Retreat From the Future: The Administration's Energy Policy (Ed) SE 81
Miller, J. D. A Simple Model of Seasonal Sea Ice Growth (80-WA/HT-20) ERT 212; (Er) ERT 290
Miller, N. R. Second International Conference on Medical Devices and Sports Equipment MD 684
Miller, R. K. Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: *P* and *SV* Motion (81-APM-18) AM 155

Milling Machine
Dynamic Analysis of Milling Machine by Torque Signals I 235
Mills, A. F. Design and Testing of Thin Adiabatic Desiccant Beds for Solar Air Conditioning Applications SE 89

Mindlin Plate Theory
Finite Elements Based Upon Mindlin Plate Theory With Particular Reference to the Four-Node Bilinear Isoparametric Element AM 587

Mineral Oil
Effect of Molecular Weight Distribution of Mineral Oil on Tribofailure of Spur Gears MD 210

Miners
Continuous Miner Noise (80-WA/NC-4) 1282

Miner's Rule
A Statistical Simulation Model of Miner's Rule MT 112

Mining Pipes
Nonlinear Static Analysis of Deep Ocean Mining Pipe—Part I: Modeling and Formulation (80-Pet-48) ERT 11; Part II: Numerical Studies (80-Pet-49) ERT 18

Mini-OTEC
Mini OTEC Operational Results SE 233

Minkowycz, W. J. Critical Heat Flux Experiments and Correlation in a Long, Sodium-Heated Tube HT 74
Mioduchowski, A. Plane Elastic Waves Generated by Dynamical Loading Applied to Edge of Circular Hole (81-WA/APM-4) AM 577

Misalignment
Friction Between High Speed Gear Coupling Teeth MD 54; (D) MD 58; (AC) MD 59
Mishina, H. The Behavior of Adhered Fragments Interposed Between Sliding Surfaces and the Formation Process of Wear Particles L 195

Mismatched Gearing
A Method of Local Synthesis of Gears Grounded on the Connections Between the Principal and Geodetic Curvatures of Surfaces (80-C2/DET-30) MD 114
Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform"—Part 3. Analysis and Optimal Synthesis Methods For Mismatch Gearing and its Application For Hypoid Gears of "Formate" and "Helixform" (80-C2/DET-33) MD 102

Mississippi River
Once-Through Cooling Potential of the Middle and Lower Mississippi River During Low Flow Conditions P 594
Mitchell, J. W. Design Procedure and Application of Solar-Assisted Series Heat Pump Systems SE 135
Mitchell, L. D. Dynamic System Response Technology Transfer Via Computer Modeling (80-C2/DET-80) MD 281
Mitchell, N. A. Nonaxisymmetric Blade Row Interaction in Axial Turbomachines (80-GT-133) P 201
Mitchiner, R. G. Dynamic System Response Technology Transfer Via Computer Modeling (80-C2/DET-80) MD 281
Mitome, K. Table Sliding Taper Hobbing of Conical Gear Using Cylindrical Hob. Part 1: Theoretical Analysis of Table Sliding Taper Hobbing I 446; Part 2: Hobbing of Conical Involute Gear I 452
Mittal, M. L. Magnetohydrodynamic Boundary Layer on a Wedge (BN) AM 656
Miura, Y. Acoustoelastic Effect of Thickness Oscillations (BN) AM 966

Mixed Convection
Mixed Convection Heat Transfer from Horizontal Cylinders in the Crossflow of a Finite Water Layer HT 540

Mixing Flows
Injection and Mixing in Turbulent Flow (BR) AM 988

Mixing Layers
Mixed Layer Development in a Double-Diffusive, Thermohaline System SE 351

Mixing Length Theory
Application of Mixing Length Theory to Wavy Turbulent Liquid—Gas Interface HT 492

Mixture Theory
An Application of Mixture Theory to Particulate Sedimentation (D) (AC) AM 210
Miyakawa, S. A Mathematical Model of Hand Transfer Motion for Application to Manipulator Control DS 152
Miyoshi, K. The Adhesion, Friction, and Wear of Binary Alloys in Contact With Single-Crystal Silicon Carbide (80-C2/Lub-53) L 180
Mizutani, H. Bending Fatigue Tests of High Speed Spur Gears (80-C2/DET-87) MD 486

Mobility
Mobility and Impedance Definitions for Plain Journal Bearings (TB) L 468

Modal Balancing
Demonstration of a Unified Approach to the Balancing of Flexible Rotors (80-GT-87) P 101

Modal Superposition
Computation of Seismic Response from Higher Frequency Modes (80-C2/PVP-50) PVT 18
Nonlinear Dynamic Analysis of a Structure Subjected to Multiple Support Motions (80-C2/PVP-52) PVT 27

Mode Shapes
The Natural Frequencies and Mode Shapes of Cables With Attached Masses (81-Pet-10) ERT 237

Model Reference Adaptive Techniques
Application of Model Reference Adaptive Techniques

to a Class of Nonlinear Systems **DS 158**

Models
Model Capabilities for In-Situ Oil Shale Recovery **ERT 138**

Moderately Concentrating Collectors
Design, Evaluation, and Testing of a Moderately Concentrating, Nontracking Solar Energy Collector **SE 34**

Modular Incinerators
A Technical Evaluation of Modular Incinerators With Heat Recovery **ERT 265**

Modulated Convertors
Minimum Energy-Loss Control of Electro-and Hydro-Mechanical Modulated Convertor Drives (80-C2/DET-42) **MD 48**

Moek, G. A Method for the Calculation of 3D Boundary Layers on Practical Wing Configurations **F 104**

Moes, H. Mobility and Impedance Definitions for Plain Journal Bearings (TB) **L 468**

Moffat, R. J. Heat Transfer in the Accelerated Fully Rough Turbulent Boundary Layer **HT 153**

Mohler, R. R. About Bilinear Systems and This Issue (F) **DS 75**; Experimental Results in the Modeling and Control of a Small Furnace **DS 370**; On the Inverse of a Special Class of Bilinear Systems (TB) **DS 103**

Moisture
An Exact Solution of the Sublimation Problem in a Porous Medium **HT 185**

Molecular Alignment
Temperature Gradients Through EHD Films and Molecular Alignment Evidenced By Infrared Spectroscopy (80-C2/Lub-12) **L 65**

Molecular Weight
Effect of Molecular Weight Distribution of Mineral Oil on Tribofailure of Spur Gears **MD 210**

Molybdenum Disulphide
Factors Affecting Fatigue Strength of Nylon Gears (80-C2/DET-104) **MD 543**

Momentum Transfer
Heat and Momentum Transfer in a Plane Turbulent Wall Jet **HT 138**

Monitoring Systems
A Furnace Wall Ash Monitoring System for Coal Fired Boilers (80-WA/Fu-1) **P 532**

Monobloc Design
Thoughts on a Code of Practice for Forged High-Pressure Vessels of Monobloc Design **PVT 2**

Monometallic Nozzle Water-Cooled Gas Turbine Monometallic Nozzle Development (80-GT-97) **P 141**

Monpoli, R. V. Model Following Control of Gas Turbine Engines **DS 285**

Monotonic Loading
The Rate (Time)-Dependent Behavior of Ti- 7Al- 2Cb-1Ta Titanium Alloy at Room Temperature Under Quasi-Static Monotonic and Cyclic Loading (81-APM-7) **AM 55**

Moodie, T. B. Plane Elastic Waves Generated by Dynamical Loading Applied to Edge of Circular Hole (81-WA/APM-4) **AM 577**

Moore, E. F. Frequency Response of Blocked Annular Fluid Transmission Lines **DS 366**

Moore, J. Calculation of Three-Dimensional, Viscous Flow and Wake Development in a Centrifugal Impeller **P 367**

Moore, J. G. Calculations of Three-Dimensional, Viscous Flow and Wake Development in a Centrifugal Impeller **P 367**

Moore, W. I. Torque Characteristics of a 122-Centimeter Butterfly Valve With a Hydro/Pneumatic Actuator **F 396**

Moretti, P. M. Overview of Wind Energy Systems: Issues in Development and Application **SE 3**

Morgan, T. In Situ Biofouling of Ocean Thermal Energy Conversion (OTEC) Evaporator Tubes **SE 121**

Mori, Y. Optimized Performance of Condensers with Outside Condensing Surfaces **HT 96**

Mori, Y. H. Cooling of Freely Falling Liquid with a Shell of an Immiscible Volatile Liquid **HT 508**

Morman, K. N A Nonlinear Theory of Viscoelasticity for Application to Elastomers (D) **AM 682**; (AC) **AM 683**

Morris, P. J. Liquid Sheet Jet Experiments: Comparison With Linear Theory **F 595**; (D) **F 603**; (AC) **F 604**

Morrison, F. A., Jr. Drag on a Droplet in Translating Fluctuating Flow (BN) **AM 436**; Droplet Dynamics in Creeping Flows (81-APM-29) **AM 224**; On the Transient Convective Transpo. from a Body of Arbitrary Shape **HT 92**

Morton, J. On the Buckling Design of Spherical Shells (81-PVP-32) **PVT 261**

Mote, C. D., Jr. Circular Saw Vibration Control by Induction of Thermal Membrane Stresses (80-WA/PROD-8) **I 81**

Motion
The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-13) **F 119**; (D) (AC) **F 126**

Exact Equations for the Large Inextensional Motion of Elastic Plates **AM 109**

Influence of Wheel/Rail Contact Geometry on Large Amplitude Wheelset Equations of Motion **DS 211**

Motion of a Bored Sphere in a Spinning Spherical Cavity **DS 389**

Nonlinear Dynamic Analysis of a Structure Subjected to Multiple Support Motions (80-C2/PVP-52) **PVT 27**

Motion Control System
A Mathematical Model of Hand Transfer Motion for Application to Manipulator Control **DS 152**

Motion Excitations
Assessment of the Dynamic Quality of a Class of Dwell-Rise-Dwell Cams (80-DET-83) **MD 793**

Motions
Analysis of Motions of a Catamaran in Arbitrary Heading Waves **ERT 219**

Motor Cars
The Development of a Perbury Traction Transmission for Motor Car Applications (80-C2/DET-59) **MD 29**

Moving Dislocations
Dislocations in Solids: Moving Dislocations (BR) **AM 214**

Moving Loads
Experimental Study on Moving Loads on a Floating Sea Ice Road **ERT 96**

Response of Periodic Systems to a Moving Load **AM 613**

On the Stability of a Composite Beam with Initial Stress to Moving Loads (81-APM-25) **AM 368**

Moving Speeds
Effects of Moving Speeds of Dynamic Loads on the Deflections of Gear Teeth **MD 357**

Mow, V. C. Effects of Nonlinear Strain-Dependent Permeability and Rate of Compression on the Stress Behavior of Articular Cartilage **BE 61**; The Significance of Electromechanical and Osmotic Forces in the Nonequilibrium Swelling Behavior of Articular Cartilage in Tension **BE 221**

Mowbray, D. F. Long-Life Fatigue Test Results for Two Nickel-Base Structural Alloys **MT 126**

Moyer, C. A. Rolling Bearing Life Modifying Factors for Film Thickness, Surface Roughness, and Friction (80-C2/Lub-16) **L 509**; (D) **L 516-518**; (AC) **L 519**

Mucino, V. H. An Exact Condensation Procedure for Chain-Like Structures Using a Finite Element-Transfer Matrix Approach (80-C2/DET-123) **MD 295**

Mueller, T. J. On the Hemolytic and Thrombogenic Potential of Occluder Prosthetic Heart Valves From In-Vitro Measurements **BE 83**

Mukherjee, H. Experimental Study of Oil-Water Flow in Inclined Pipes (80-Pet-51) **ERT 56**

Mukherjee, S. A State Variable Analysis of Inelastic Deformation of Thin Walled Tubes **MT 305**

Müller, H. W. Adaption of Continuously Variable Transmissions to the Characteristic of a Driven Machine by Bicoupled Planetary Transmissions (80-C2/DET-92) **MD 41**

Multiaxial Loadings
A New Approach to the Evaluation of Fatigue Under Multiaxial Loadings **MT 118**

Multidimensional Linear Systems
Stability Theorems for Multidimensional Linear Systems With Variable Parameters **AM 174**

Multifrequency Techniques
A Comparison of Multifrequency Techniques for Measuring the Dynamics of Squeeze-Film Bearings (80-C2/Lub-46) **L 137**

Multifunctional Production Systems
Optimum Process Design for a Single-Stage Multifunctional Production System (80-WA/Prod-19) **I 218**

Multi-Level Auto Racks
Ride Quality Analysis of Multi-Level Auto Rack Equipped Flat Cars (79-WA/RT-4) **I 241**

Multipass Turning
Optimization of Multipass Turning With Constraints **I 462**

Multiphase Flows
Symposium on Multiphase Heat and Mass Transfer Processes in Fluid Transients **F 74**

Multiphase Systems
Performance of a Multiphase Boiling MHD Generator **P 582**

Multiple-Degree-of-Freedom Motions
Instantaneous Kinematics of Multiple-Degree-of-Freedom Motions (80-DET-53) **MD 808**

Multiple Loading Surfaces
On the Formulation of Strain-Space Plasticity With Multiple Loading Surfaces (81-WA/APM-20) **AM 773**

Multiple Regenerative Effect
Behavior of Self-Excited Chatter Due to Multiple Regenerative Effect **I 324**

Multiroller Traction Drives
Constrained Fatigue Life Optimization of a Nasvytis Multiroller Traction Drive (80-C2/DET-78) **MD 423**; (D) **MD 428**; (AC) **MD 429**

Multispecimen Chain Testing
Multispecimen Fatigue Crack Propagation Testing **MT 240**

Multi-Toothed Helical Cutters
Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operation—Part I: Plain Milling With a Single-Toothed Helical Cutter (80-WA/Prod-4) **I 185**; Part II: Plain Milling With a Multi-Toothed Helical Cutter (80-WA/Prod-5) **I 174**

Mura, T. A Dislocation Model for Fatigue Crack Initiation (81-APM-3) **AM 97**; *(reviewer)* Dislocations in Solids: Dislocations in Metallurgy (BR) **AM 451**; Dislocations in Solids: Moving Dislocations (BR) **AM 214**; Dislocations in Solids: Other Effects of Dislocations: Disclinations (BR) **AM 452**; On Stiffness and Strength of an Aligned Short-Fiber Reinforced Composite Containing Fiber-End Cracks Under Uniaxial Applied Stress **AM 361**

Murphy, T. W., Jr. High Speed Testing of the Hollow Roller Bearing (80-C2/Lub-6) **L 1**

Murray, P. R. On the Buckling Design of Spherical Shells (81-PVP-32) **PVT 261**

Murthy, R. V. G. K. On Some Aspects of Surface Formation in ECM **I 341**

Musicco, G. G. Application of the Tearing-Mode Crack-Growth Instability Theory to a Cracked Pressure Vessel Nozzle **PVT 59**

Mutoh, Y. An Analysis of Grain Size and Yield Stress Effects on Stress at Fatigue Limit and Threshold Stress Intensity Factor **MT 229**

Myers, E. The Significance of Electromechanical and Osmotic Forces in the Nonequilibrium Swelling Behavior of Articular Cartilage in Tension **BE 221**

N

Nabarro, F. R. N. *(editor)* Dislocations in Solids: Dislocations in Metallurgy (BR) **AM 451**; Dislocations in Solids: Other Effects of Dislocations: Disclinations (BR) **AM 452**

Nagai, K. Cooling of Freely Falling Liquid Drops with a Shell of an Immiscible Volatile Liquid **HT 508**

Nagaya, K. Effects of Moving Speeds of Dynamic Loads on the Deflections of Gear Teeth **MD 357**

Nageswara Rao, B. Magnetohydrodynamic Boundary Layer on a Wedge (BN) **AM 656**

Naghdi, A. K. Conduction Shape Factors for Certain Multi-Hole Prismatic Bars (TN) **HT 821**

Naghdi, P. M. On the Characterization of Strain-Hardening in Plasticity (81-APM-26) **AM 285**; A Correct Definition of Elastic and Plastic Deformation and Its Computational Significance

(D) **AM 983**; (AC) **AM 984**

Nakahara, J. Externally Pressurized Two Layer Film Bearing—Gas Bearing With Liquid Layer (80-C2/Lub-41) **L 573**; (D) (AC) **L 577**

Nakajima, A. Effect of Asperity Interaction on Pitting in Rollers and Gears (80-C2/DET-36) **MD 482**

Nakajima, F. No_x Removal Process by Injection of NH_3 and H_2O_2 in Gas Turbine Exhaust Gas **P 589**

Nakano, M. Acoustic Emission Monitoring During Rupture Test of Pressure Vessel and Laboratory Fracture Test **PVT 191**

Nakayama, W. Optimized Performance of Condensers with Outside Condensing Surfaces **HT 96**

Nandakumar, K. Steady Laminar Flowthrough Twisted Pipes. Fluid Flow in Square Tubes **HT 785**; Steady Laminar Flow through Twisted Pipes. Heat Transfer in Square Tubes **HT 791**

Nansteel, M. W. Natural Convection in Undivided and Partially Divided Rectangular Enclosures **HT 623**

Narasimha Reddy, P. Some Investigations Into Machining With Driven Rotary Tools **I 469**

Narayanan, S. Free Vibration of Thin-Walled Open Section Beams With Unconstrained Damping Treatment **AM 169**

Narayanan, T. V. High-Flux Solar Absorber Concept for Central Receiver Power Plants **SE 52**

Narita, Y. Vibrations of Free Circular Plates Having Elastic Constraints and Added Mass Distributed Along Edge Segments (BN) **AM 196**

Narrow Annulus

Tube Wall Temperatures of an Eccentrically Located Horizontal Tube within a Narrow Annulus with Tube Contact (TN) **HT 186**

Narumiya, H. Rubber Surface Squeeze Film (80-C2/Lub-33) **L 398**; (D) (AC) **L 404**

Narusawa, U. Dense, Vertical Jets with Two Opposing Buoyancy Components **HT 135**

Nasvytis Multiroller Traction Drive

Constrained Fatigue Life Optimization of a Nasvytis Multiroller Traction Drive (80-C2/DET-78) **MD 423**; (D) **MD 428**; (AC) **MD 429**

Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) **MD 410**; (D) **MD 417**; (AC) **MD 420**

Natarajan, R. A Finite Element Method for the Elastic Contact Problems **I 456**

Natural Circulation Systems

Experimental and Analytical Investigation of a Natural Circulation System with Parallel Loops **HT 645**

Natural Convection

Effect of Vertical Separation Distance and Cylinder-to-Cylinder Temperature Imbalance on Natural Convection for a Pair of Horizontal Cylinders **HT 638**

Flow Structure with Natural Convection in Inclined Air-Filled Enclosures **HT 535**

The Influences of Property Variations on Natural Convection from Vertical Surfaces **HT 609**

Natural Convection Heat Transfer Between Cylindrical Tube Bundles and a Cubical Enclosure **HT 103**

Natural Convection Heat Transfer Coefficients for a Short Horizontal Cylinder Attached to a Vertical Plate **HT 630**

Natural Convection in Horizontal Duct Connecting Two Fluid Reservoirs **HT 108**

Natural Convection and Sidewall Losses in Trapezoidal Groove Collectors **SE 167**

Natural Convection in Undivided and Partially Divided Rectangular Enclosures **HT 623**

A Numerical Study of Natural Convection in a Horizontal Porous Layer Subjected to an End-to-End Temperature Difference **HT 797**

The Transition from Natural-Convection-Controlled Freezing to Conduction-Controlled Freezing **HT 7**; (D) (AC) **HT 825**

Natural Frequencies

Calculating Natural Frequencies With Extended Tuplin's Method (80-C2/DET-48) **MD 379**

The Natural Frequencies and Mode Shapes of Cables With Attached Masses (81-Pet-10) **ERT 237**

Natural Gas

Modeling Requirements for Geopressured-Geothermal Reservoir Production **ERT 301**

Nau, B. S. Elastohydrodynamic Lubrication of Offset O-Ring Rotary Seal (80-C2/Lub-7) **L 414**; (D) **L 424, 425, 426**; (AC) **L 427**; Rubber Surface Squeeze Film (80-C2/Lub-33) **L 398**; (D) (AC) **L 404**

Navier Equations

Solution of Navier's Equation in Rotational Curvilinear Coordinates (BN) **AM 659**

Nayak, J. H. Instantaneous Kinematics of Multiple-Degree-of-Freedom Motions (80-DET-53) **MD 608**

Neale, K. W. A Criterion for Low-Cycle Fatigue Failure Under Biaxial States of Stress **MT 1**

Nearest Neighbors

A One Dimensional Crystal With Nearest Neighbors Coupled Through Their Velocities (TB) **DS 293**

Nedelcu, S. *(author)* Lagare Cu Alunecare (Sliding Bearings) (BR) **L 319**

Negas, T. Fabrication, Testing, and Evaluation of Prototype Fluids Capillary Pyrometer Systems **DS 306**

Negative Buoyancy

Dense, Vertical Jets with Two Opposing Buoyancy Components **HT 135**

Nelson, D. L. Duluth Co-Disposal Facility **ERT 262**

Nelson, H. F. Anisotropic Two-Dimensional Scattering: Comparison of Experiment with Theory **HT 127**

Nemat-Nasser, S. Approximate Description of Crack Kinking and Curving (81-APM-22) **AM 515**; On Branched, Interface Cracks (81-APM-20) **AM 529**; Energy-Release Rate and Crack Kinking Under Combined Loading **AM 520**; Harmonic Waves in Fiber-Reinforced Orthotropic Elastic Composites (BN) **AM 967**; A Micromechanical Description of Granular Material Behavior **AM 339**

Nerem, R. M. Hemodynamics and the Arterial Wall: An Introduction **BE 171**; Vascular Endothelial Morphology as an Indicator of the Pattern of Blood Flow **BE 172**

Nerli, G. Determination of Balloon Surface in Textile Machines—A Finite Segment Approach **I 424**

Neti, S. The Numerical Prediction of Developing Turbulent Flow in Rectangular Ducts **F 445**; (D) **F 454**; (AC) **F 455**

Neumann Problem

Approximate Solution to Neumann Problem for Soil Systems (80-Pet-14) **ERT 76**

Newtonian Fluid

A Numerical Study of Nonaxisymmetric Stokesian Flow in a Circular Tube (81-WA/APM-16) **AM 459**

Nghiem, L. Prediction of Transient Inception of Boiling in Terms of a Heterogeneous Nucleation Theory (80-HT-113) **HT 69**

Nguyen, K. Propagation and Extinction of Combustion Fronts in Crushed Oil Shale (80-Pet-77) **ERT 133**

Nica, A. *(author)* Lagare Cu Alunecare (Sliding Bearings) (BR) **L 319**

Nicholais, L. *(editor)* Rheology (BR) **AM 450**

Nicholas, P. D. Friction Reduction in Turbulent Journal Bearings by High Polymers (D) **L 317**; (AC) **L 318**

Nichols, B. D. A Computational Method for Free Surface Hydrodynamics **PVT 136**

Nichrome Metallic Binders

Friction and Wear Results From Sputter-Deposited Chrome Oxide With and Without Nichrome Metallic Binders and Interlayers (80-C2/Lub-49) **L 218**

Nickel-Base Alloys

Long-Life Fatigue Test Results for Two Nickel-Base Structural Alloys **MT 126**

Nickell, R. E. Technical Editor's Page **PVT 129**; **PVT 213**; **PVT 301**

Niethammer, J. E. Effect of Vertical Separation Distance and Cylinder-to-Cylinder Temperature Imbalance on Natural Convection for a Pair of Horizontal Cylinders **HT 638**

Nilson, R. H. Gas-Driven Fracture Propagation **AM 757**; Natural Convective Boundary-Layer on Two-Dimensional and Axisymmetric Surfaces in High-Pr Fluids or in Fluid-Saturated Porous Media **HT 803**; Transient Fluid Flow in Porous Media: Inertia-Dominated to Viscous-Dominated Transitions **F 338**

Nimmo, B. Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate (D) **HT 824**; (AC) **HT 825**; Force Convection Heat Transfer at an Inclined and Yawed Square Plate—Application to Solar Collectors (D) **HT 824**; (AC) **HT 825**; Local Heat Transfer and Fluid Flow Characteristics for Airflow Oblique or Normal to Square Plate (D) **HT 824**; (AC) **HT 825**

Nir, A. Diffusion of Macromolecules Across the Arterial Wall in the Presence of Multiple Endothelial Injuries **BE 197**

Nishi, M. Optimum Strut-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) **F 294**

Nitrogen Oxides

NO_x Removal Process by Injection of NH_3 and H_2O_2 in Gas Turbine Exhaust Gas **P 589**

Nizou, P. Y. Heat and Momentum Transfer in a Plane Turbulent Wall Jet **HT 138**

Nodal Derivatives

An Isoparametric Finite Element With Nodal Derivatives (81-APM-1) **AM 64**

Nodal Patterns

Finite Elements Based Upon Mindlin Plate Theory With Particular Reference to the Four-Node Bilinear Isoparametric Element **AM 587**

Nogami, M. Tooth Bearing Analysis and Surface Durability of Symmetrical Conformal Gears **MD 141**

Noise

Continuous Miner Noise (80-WA/NC-4) **I 282**

An Investigation of the Mechanics and Noise Associated with Coal Cutting (80-WA/NC-1) **I 257**

Proceedings of Noise-CON 79, Machinery Control Noise (BR) **MD 261**

Sound Transmission Through a Cylindrical Pipe Wall (80-WA/NC-3) **I 355**

Noise Generation

Generation of Squeal/Chatter in Water-Lubricated Elastomeric Bearings (80-C2/Lub-45) **L 406**; (D) (AC) **L 413**

Noise Radiation

Variational Formulations for the Finite Element Analysis of Noise Radiation from High-Speed Machinery **I 385**

Noise Regulations

Numerical Techniques in Linear Duct Acoustics—A Status Report (80-WA/NC-2) **I 270**

Nominal Regimes

One Engineering Concept of Dynamic Control of Manipulators **DS 108**

Nonbuckling

On the Nonbuckling of a Circular Ring Under "Wrapping" Loading (D) **AM 682**

Non-Circular Gears

Kinematic Efficiency of Non-Circular Geared Transmissions **MD 170**

Noncollinear Waves

Dynamic Response of a Double Articulated Offshore Loading Structure to Noncollinear Waves and Current (80-Pet-56) **ERT 41**

Nonconventional Fluids

Efficiency Prediction for Axial-Flow Turbines Operating with Nonconventional Fluids (81-GT-15) **P 718**

Nondestructive Method

Measuring the Actual Endurance Limit of One Specimen Using a Nondestructive Method **MT 71**

Nongradient Systems

On the Stability of Equilibrium Paths Associated With Autonomous Systems (81-APM-9) **AM 183**

Nongray Medium

Application of the P-1 Approximation to Radiative Heat Transfer in a Nongray Medium (TN) **HT 182**

Nonholonomic Constraint

Energy-Based Modeling and Quasi Coordinates **DS 5**

Nonholonomic Dynamic Systems

Modeling of Nonholonomic Dynamic Systems With Applications (81-APM-12) **AM 177**

Nonirradiated Collectors

Simulation of Thermal Performance of Solar Collector Arrays (81-WA/Sol-1) **SE 258**

Nonisothermal Conditions

Lubrication of a Melting Slider Under Nonisothermal Conditions **L 436**

Nonisothermal Flows

State-of-the-Art of Models for Geothermal Recovery Processes **ERT 291**

Nonlinear Control
On the Efficacy of Nonlinear Control in Uncertain Linear Systems **DS 95**
Nonlinear Control Systems
Estimating Reachable Sets (TB) **DS 420**
Nonlinear Dynamical Systems
A Generalized Theory of Cell-to-Cell Mapping for Nonlinear Dynamical Systems (81-WA/APM-25) **AM 634**
Nonlinear Dynamics
A New Feedback Method for Dynamic Control of Manipulators **DS 119**
On the Nonlinear Intrinsic Dynamics of Doubly Curved Shells (81-WA/APM-9) **AM 909**
Nonlinear Feedback Loop
Volterra Series Expansion for Bilinear Systems in a Nonlinear Feedback Loop **DS 84**
Nonlinear Media
Characteristic Forms of Differential Equations for Wave Propagation in Nonlinear Media (81-WA/APM-23) **AM 743**
Nonlinear Oscillations
Nonlinear Oscillations (BR) **AM 988**
Nonlinear Problems
New Approach to Nonlinear Problems in Dynamics (BR) **AM 453**
Nonlinear State Observers
Nonlinear State Estimation and Feedback Control of Nonlinear and Bilinear Distributed Parameter Systems **DS 78**
Nonlinear Stochastic Systems
Improved Statistical Linearization for Analysis and Control of Nonlinear Stochastic Systems—Part I: An Extended Statistical Linearization Technique **DS 14**; Part II: Application to Control System Design **DS 22**
Nonlinear Systems
About Bilinear Systems and This Issue (F) **DS 75**
Analytical/Experimental Correlation of a Nonlinear System Subjected to a Dynamic Load **PVT 94**
Application of Model Reference Adaptive Techniques to a Class of Nonlinear Systems **DS 158**
Model Following Control of Gas Turbine Engines **DS 285**
Nonlinear Theory
Nonlinear Theory for Flexural Motions of Thin Elastic Plate—Part 1: Higher-Order Theory **AM 377**; Part 2: Boundary-Layer Theory Near the Edge **AM 383**
Non-Newtonian Fluid
The Flow of a Non-Newtonian Fluid Past Projections and Depressions (D) **AM 448**
Nonparallelism
Stability of Developing Flow in a Pipe—Nonparallel Effects (81-APM-13) **AM 243**
Nonuniform Heat Transfer
The Effects of Nonuniform Heat Transfer from an Annular Fin of Triangular Profile (TN) **HT 184**
Nonuniform Wall Heating
An Integral Analysis for Heat Transfer in Turbulent Incompressible Boundary Layer Flow **HT 772**
Nordkvist, K. E. Roller Chain as a Transfer Drive for the Automobile **MD 19**
Norose, S. The Behavior of Adhered Fragments Interposed Between Sliding Surfaces and the Formation Process of Wear Particles **L 195**
Norton, R. J. G. Interferometric Measurements in a Turbine Cascade Using Image-Plane Holography (80-GT-91) **P 124**
Norwood, F. R. A Model to Estimate Forces on Conical Penetrators Into Dry Porous Rock (81-APM-15) **AM 25**
Notched Specimens
Fatigue Life Predictions of Smooth and Notched Specimens Based on Fracture Mechanics **MT 91**
Nowinski, J. L. *(reviewer)* Thermal Stresses in Severe Environments (BR) **AM 453**
Noyes, R. *(editor)* Small and Micro Hydroelectric Plants (BR) **F 484**
Nozzle Exit
Developing Region of Iaminar Jets With Parabolic Exit Velocity Profiles (81-FE-3) **F 322**
Nozzles
Application of the Tearing-Mode Crack Growth Instability Theory to a Cracked Pressure Vessel Nozzle **PVT 59**
Background of New Code Rules for Integral Flat Heads with a Large, Central Nozzle **PVT 118**
An Investigation into the Performance of Two Inlet Nozzles for Flow Measurement **F 67**; (D) (AC) **F 73**
Water-Cooled Gas Turbine Monometallic Nozzle Development (80-GT-97) **P 141**
Nuclear Plants
Developments in Power Fluidics for Application in Nuclear Plant **DS 342**
Nuclear Power
The Nuclear Closed-Cycle Gas Turbine (HTGR-GT)—Dry Cooled Commercial Power Plant Studies (80-GT-82) **P 89**
Nuclear Reactor Safety
A Structural Priority Approach to Fluid-Structure Interaction Problems **PVT 142**
Nucleate Boiling
An Analytical and Experimental Investigation of Bubble Waiting Time in Nucleate Boiling **HT 673**
Applicability of the Bubble Flux Density Concept (TN) **HT 175**
Semi-Transparent Gold Film as Simultaneous Surface Heater and Resistance Thermometer for Nucleate Boiling Studies **HT 65**
Nucleating Sources
A Comparison of Two Optical Techniques for Measuring Cavitation Nuclei **F 8**
Nucleation
Homogeneous Nucleation and the Spinodal Line **HT 61**
Prediction of Transient Inception of Boiling in Terms of a Heterogeneous Nucleation Theory (80-HT-113) **HT 69**
Numerical Predictions
The Numerical Prediction of Developing Turbulent Flow in Rectangular Ducts **F 445**; (D) **F 454**; (AC) **F 455**
Numerical Solution
A Numerical Solution to Dropwise Evaporation **HT 501**
Numerical Study
A Numerical Study of Natural Convection in a Horizontal Porous Layer Subjected to an End-to-End Temperature Difference **HT 797**
Nunn, R. H. Motion of a Bored Sphere in a Spinning Spherical Cavity **DS 389**
Nylon Gears
Factors Affecting Fatigue Strength of Nylon Gears (80-C2/DET-104) **MD 543**

O

Oblique Impact
The Role of Elastic Tangential Compliance in Oblique Impact (80-C2/Lub-22) **L 74**
O'Brien, V. The Flow of a Non-Newtonian Fluid Past Projections and Depressions (D) **AM 448**
Ocean Energy
Ammonia Turbine Design for Ocean Thermal Energy Conversion (OTEC) Plants **SE 92**
Ocean Environment
A Three-Dimensional Geometrically Nonlinear Analysis of Pipelaying in an Ocean Environment (TB) **PVT 201**
Ocean Mining
Nonlinear Transient Motion of Deep Ocean Mining Pipe **ERT 2**
Ocean Thermal Energy Conversion
A Detailed Transient Model of an OTEC Evaporator **P 539**
In Situ Biofouling of Ocean Thermal Energy Conversion (OTEC) Evaporator Tubes **SE 121**
Mini-OTEC Operational Results **SE 233**
Odorizzi, S. A Three-Dimensional Geometrically Nonlinear Analysis of Pipelaying in an Ocean Environment (TB) **PVT 201**
Offset O-Rings
Elastohydrodynamic Lubrication of Offset O-Ring Rotary Seal (80-C2/Lub-7) **L 414**; (D) **L 424, 425, 426**; (AC) **L 427**
Offshore Drilling Islands
The Design and Construction of Beaufort Sea Drilling Islands—Sag Delta 7 and 8 **ERT 208**
Offshore Petroleum Industry
Europe's Offshore Oil & Gas (BR) **ERT 200**
Offshore Pipelines
Evaluation of Tensile Failure of Girth Weld Repair Grooves in Pipe Subjected to Offshore Laying Stresses (80-Pet-74) **ERT 48**
Offshore Structures
Dynamic Response of a Double Articulated Offshore Loading Structure to Noncollinear Waves and Current (80-Pet-56) **ERT 41**
Ogg, J. S. Pattern Factor Improvement in the F-100 Primary Combustion System (81-GT-25) **P 739**
Oh, S. Y. Control of Force Distribution in Robotic Mechanisms Containing Closed Kinematic Chains **DS 134**
Ohashi, H. Forces on Staggered Airfoil Cascades in Unsteady In-Phase Motion **F 299**
Ohashi, K. Optimum Process Design for a Single-Stage Multifunctional Production System (80-WA/Prod-19) **I 218**
Ohashi, Y. Plastic Deformation Behavior of Mild Steel Along Orthogonal Trilinear Strain Trajectories in Three-Dimensional Vector Space of Strain Deviator **MT 287**
Ohgi, G. Fatigue Criteria Under Combined Stresses or Strains **MT 82**
Ohkuma, H. Modeling Requirements for Geopressured-Geothermal Reservoir Production **ERT 301**
Ohtsuka, N. Acoustic Emission Monitoring During Rupture Test of Pressure Vessel and Laboratory Fracture Test **PVT 191**
Ohwovoriole, M. S. An Extension of Screw Theory (80-DET-20) **MD 725**
Oil Discharge
A Comparison of Film Temperatures and Oil Discharge Temperature for a Tilting-Pad Journal Bearing (80-C2/Lub-37) **L 115**
Oil Film
Measured Characteristics of a Journal Bearing Oil Film (80-C2/Lub-51) **L 120**
Oil Hydraulic Systems
Cavitation Inception in Spool Valves **F 584**; (D) **F 575**; (AC) **F 576**
Oil Recovery
State-of-the-Art of Thermal Recovery Models **ERT 296**
Oil Sands
Jet Piercing of Oil Sands **ERT 330**
Oil Shale
Heat Transfer to Oil Shale in a Closely Spaced Bundle as an Approximation to a Packed Bed (79-WA/HT-34) **ERT 307**
Model Capabilities for In-Situ Oil Shale Recovery **ERT 138**
Oil Shale Retorting in a Bottom-Burning Retort (79-HT-3) **ERT 119**
Propagation and Extinction of Combustion Fronts in Crushed Oil Shale (80-Pet-77) **ERT 133**
Oil Squeeze-Films
Rubber Surface Squeeze Film (80-C2/Lub-33) **L 398**; (D) (AC) **L 404**
Oil-Water Flow
Experimental Study of Oil-Water Flow in Inclined Pipes (80-Pet-51) **ERT 56**
Okabe, S. Study on Vibratory Feeders: Calculation of Natural Frequency of Bowl-Type Vibratory Feeders **MD 249**
Okamoto, T. Contact Stress Between Rollers With Surface Irregularity (80-C2/DET-10) **MD 492**
Oker, E. Semi-Transparent Gold Film as Simultaneous Surface Heater and Resistance Thermometer for Nucleate Boiling Studies **HT 65**
Oldfield, M. L. G. Boundary Layer Studies on Highly Loaded Cascades using Heated Thin Films and a Traversing Probe (80-GT-137) **P 237**; Interferometric Measurements in a Turbine Cascade Using Image-Plane Holography (80-GT-91) **P 124**
Olson, R. J. Stress Intensity Factors due to Residual Stresses in Thin-Walled Girth-Welded Pipes (79-PVP-30) **PVT 86**
Olvera, A. Design, Evaluation, and Testing of a Moderately Concentrating, Nontracking Solar Energy Collector **SE 34**
O'Massey, R. C. Longitudinal Instability in Braked Landing Gear **DS 259**
Once-Through Cooling
Once-Through Cooling Potential of the Middle and

Lower Mississippi River During Low Flow Conditions P 594
One Dimensional Crystal
A One Dimensional Crystal With Nearest Neighbors Coupled Through Their Velocities (TB) DS 293
One-Dimensional Problems
A Finite-Element Singular-Perturbation Technique for Convection-Diffusion Problems—Part 1: The One-Dimensional Case AM 265; Part 2: Two Dimensional Problems AM 272
One Space Dimension
A Hybrid Numerical Method for Homogeneous Equilibrium Two-Phase Flows in One Space Dimension (80-C2/PVP-51) PVT 20
Open Section Beams
Free Vibration of Thin-Walled Open Section Beams With Unconstrained Damping Treatment AM 169
Operating Temperature
Prediction of the Operating Temperature of Thrust Bearings (80-C2/Lub-30) L 97
Operators
Utility Operations: An Effective and Economic Approach to Operator Training (80-JPGC/Pwr-2) P 348
Opposing Stream
Prediction and Measurement of Mass, Heat, and Momentum Transport in a Nonreacting Turbulent Flow of a Jet in an Opposing Stream F 127
Optical Advances
Optical Advances in Laser Transit Anemometry P 438
Optical Interferometry Technique
An Experimental Evaluation of the Hamrock and Dowson Minimum Film Thickness Equation for Fully Flooded EHD Point Contacts (80-C2/Lub-38) L 284; (D) L 294
Optics
Interferometry by Holography (BR) AM 450
Optimal Control
Optimal Control of Mass Flow Rates in Flat Plate Solar Collectors SE 113
Optimal Design
The Optimization Problem With Optimal Tolerance Assignment and Full Acceptance (80-DET-47) MD 842
Optimal Isolation
Optimal Isolation of a Single-Degree-of-Freedom System with Quadratic-Velocity Damping (BN) AM 676
Optimal Strategy
Payoff Sensitivity of Linear Quadratic Differential Games to Parameter Change DS 36
Optimization
Adaptive Control Optimization of Grinding (80-WA/PROD-12) I 103
Future Trends in Optimization (CR) MD 677
Optimization Analysis
Optimization Analysis of Automated Assembly Systems (80-WA/Prod-20) I 224
Optimum Process Design
Optimum Process Design for a Single-Stage Multifunctional Production System (80-WA/Prod-19) I 218
Optimum Surface Geometry
Optimized Performance of Condensers with Outside Condensing Surfaces HT 96
Oranratnachai, A. Approximate Description of Crack Kinking and Curving (81-APM-22) AM 515
Orin, D. E. Control of Force Distribution in Robotic Mechanisms Containing Closed Kinematic Chains DS 134
Orlandea, N. Dynamic Continuous Path Synthesis of Industrial Robots Using ADAMS Computer Program (80-DET-41) MD 602
Ortega, J. K. E. Performance of Storage Walls with Highly Conductive Covering Plates and Connecting Fins SE 201; Radiation and Free Convection Shield for Passive Thermal Control (80-WA/Sol-7) SE 62
Orthogonal Polynomials
Theories for Elastic Plates Via Orthogonal Polynomials AM 900
Orthotropic Elastic Constants
Ultrasonic Measurement of Orthotropic Elastic Constants of Bovine Femoral Bone BE 67
Orthotropic Plates
Application of Orthotropic Plate Theory to Windmill Blade Design MD 892
Orthotropic Rotating Disks
The Stress Distribution in Orthotropic Rotating Disks AM 559
Ortolano, R. J. Long Arc Shrouding—A Reliability Improvement for Untuned Steam Turbine Blading (78-JPGC/Pwr-12) P 522; (D) P 527, 528, 530; (AC) P 528, 529, 530
Oscillating Jets
Generation of Oscillating Jets F 609
Oscillating Rods
Acoustic Loading Effects on Oscillation Rod Bundles (80-C2/PVP-125) PVT 322
Oscillations
Acoustoelastic Effect of Thickness Oscillations (BN) AM 966
Density-Wave Oscillations in Sodium Heated Once-Through Steam Generator Tubes HT 485
Oscillators
Calculation of the Response of an Impulsively Excited Oscillator in an Infinite Acoustic Fluid AM 749
Oscillatory Compression
Oscillatory Compressional Behavior of Articular Cartilage and Its Associated Electromechanical Properties BE 280
Oshima, R. NO_x Removal Process by Injection of NH_3 and H_2O_2 in Gas Turbine Exhaust Gas P 589
Osman, M. O. M. Kinematic Analysis of Spatial Mechanisms Using Train Components MD 823
Osmotic Forces
The Significance of Electromechanical and Osmotic Forces in the Nonequilibrium Swelling Behavior of Articular Cartilage in Tension BE 221
Ostergren, W. J. Methods of Predicting Material Life in Fatigue (Ed) MT 81
Osterle, F. The Thermodynamic Performance of Two Combined Cycle Power Plants Integrated with Two Coal Gasification Systems P 572
Ostrovskaya, G. V. *(author)* Interferometry by Holography (BR) AM 450
Ostrovsky, U. I. *(author)* Interferometry by Holography (BR) AM 450
O'Sullivan, C. H. A Single-Stage Ammonia/Water Absorption Cycle With Integrated Heat Exchange Components SE 42
OTEC Plants
Ammonia Turbine Design for Ocean Thermal Energy Conversion (OTEC) Plants SE 92
Outlet Temperature
Analytical Dynamic Modeling of Line-Focus Solar Collectors SE 244
Ovalling Stresses
Creep Relaxation of Fuel Pin Bending and Ovalling Stresses (80-C2/NE-24) P 621
Overloads
On Stress-Strain Relations Suitable for Cyclic and Other Loading (81-WA/APM-6) AM 479
Overturning
The Effect of Cross-Winds on Trains F 170
Owen, P. J. Roller Chain as a Transfer Drive for the Automobile MD 19
Owens, W. L. Mini-OTEC Operational Results SE 233
Oxygen Facilities
Oxygen Facilities for Synthetic Fuel Projects I 409
Özişik, M. N. Effect of Axial Conduction and Convective Boundary Conditions in Slug Flow inside a Circular Tube HT 436; Quasi-Steady-State Temperature Distribution in Periodically Contacting Finite Regions HT 739

P

P-1 Approximation
Application of the P-1 Approximation to Radiative Heat Transfer in a Nongray Medium (TN) HT 182
Packed Bed Case
Extension of the Adams-Welty Fluid Bed Heat Transfer Model to the Packed Bed Case HT 602
Packed Beds
Heat Transfer to Oil Shale in a Closely Spaced Bundle as an Approximation to a Packed Bed (79-WA/HT-34) ERT 307
Padé Approximations
Stable Linear Systems Simplification Via Padé Approximations to Hurwitz Polynomials DS 279
Pairing
Tilting, Stretching, Pairing and Collapse of Vortex Structures in Confined Counter-Current Flow (80-WA/FE-11) F 466
Pal, S. Wake Behavior in the Presence of Free Stream Turbulence P 490
Palaszewski, S. J. A Three-Dimensional Air-Vapor-Droplet Local Interaction Model for Spray Units HT 514
Palgen, L. On Stress-Strain Relations Suitable for Cyclic and Other Loading (81-WA/APM-6) AM 479
Palmgren-Miner Rule
A Reinterpretation of the Palmgren-Miner Rule for Fatigue Life Prediction (D) AM 446; (AC) AM 448
Pampreen, R. C. A Blockage Model for Centrifugal Compressor Impellers (81-GT-11) P 698
Pan, C. H. T. Cavitation in a Short Bearing With Pressurized Lubricant Supply (80-C2/Lub-47) L 337; (D) L 346; (AC) L 347
Pan, S. Cavitation Inception Tests on Axisymmetric Headforms F 268
Panda, G. C. Unsteady Hydromagnetic Flow Near a Moving Porous Plate AM 255
Pandey, P. C. Tooling Design for ECM—A Finite Element Approach (80-WA/Prod-9) I 183
Pandit, S. M. A Data Dependent Systems Approach to Dynamics of Surface Generation in Turning I 437
Pao, Y.-H. Propagation of Elastic Pulses and Acoustic Emission in a Plate Part 1: Theory (81-APM-4) AM 125; Part 2: Epicentral Responses (81-APM-5) AM 133; Part 3: General Responses (81-APM-6) AM 139
Papoutsakis, E. Heat Transfer in a Capillary Flow Emerging from a Reservoir HT 429
Parabolic Trough Solar Collectors
An Analysis of the Influence of Geography and Weather on Parabolic Trough Solar Collector Design (80-C2/Sol-19) SE 98
Frequency Response Analysis of Fluid Control Systems for Parabolic Trough Solar Collectors SE 339
Mean Wind Loading on Parabolic-Trough Solar Collectors SE 313
Parabolic Velocity Profiles
Developing Region of Laminar Jets With Parabolic Exit Velocity Profiles (81-FE-3) F 322
Paradox
On the Polygon-Circle Paradox (BN) AM 195
Parallel Loops
Experimental and Analytical Investigation of a Natural Circulation System with Parallel Loops HT 645
Parallel Plate Channel
Linear Spatial Stability of Developing Flow in a Parallel Plate Channel (BN) AM 192
Parameter Change
Payoff Sensitivity of Linear Quadratic Differential Games to Parameter Change DS 36
Parametric Instability
Parametric Instability of a Rotating Shaft Due to Pulsating Torque AM 948
Parametric Instability
Parametric Instability of a Rotatiang Shaft Due to Pulsating Torque AM 948
Parametric Study
A Parametric Study of a Particulate Direct Contact Heat Exchanger (78-WA/HT-15) HT 586
Parks, P. C. Ductile Tearing Instability of a Center-Cracked Panel of an Elastic-Plastic Strain Hardening Material MT 46
Park, Y. J. Cyclic Behavior of Class U Wheel Steel (80-WA/RT-9) I 113
Parker, H. S. Fabrication, Testing, and Evaluation of Prototype Fluidic Capillary Pyrometer Systems DS 308
Parker, H. W. Commercial Scale Equipment for Coal Conversion Processes ERT 186; Engine Fuels From Biomass (81-DGP-4) ERT 344
Parker, J. D. Reference Temperatures for Supercritical Laminar Free Convection on a Vertical Flat Plate HT 613
Parker, R. J. Performance of Computer-Optimized Tapered-Roller Bearings to 2.4 Million DN (80-C2/Lub-16) L 13
Parker, S. P. *(editor)* McGraw-Hill Encyclopedia of

Energy (BR) **ERT 200**

Parkin, B. R. The Initiation of Gaseous Microbubble Growth in Laminar Separation Bubbles **F 543**; (D) (AC) **F 549**; A Possible Criterion for Cavitation Inception on Hemispherical Headforms **F 577**

Parkins, D. W. Measured Characteristics of a Journal Bearing Oil Film (80-C2/Lub-51) **L 120**

Parkinson, A. G. Demonstration of a Unified Approach to the Balancing of Flexible Rotors (80-GT-87) **P 101**

Parks, D. M. The Inelastic Line-Spring: Estimates of Elastic-Plastic Fracture Mechanics Parameters for Surface-Cracked Plates and Shells (80-C2/PVP-109) **PVT 246**

Partial Divisions
Natural Convection in Undivided and Partially Divided Rectangular Enclosures **HT 623**

Particles
An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) **P 552**; (D) **P 558, 559**; (AC) **P 560**
Fundamentals of Gas-Particle Flow (BR) **F 644**

Particulates
An Application of Mixture Theory to Particulate Sedimentation (D) (AC) **AM 210**
Nongray Particulate Radiation in an Isothermal Cylindrical Medium **HT 121**
Soot Formation in a Turbulent Swirl Stabilized Laboratory Combustor (80-GT-77) **P 49**

Partlett, B. N. *(author)* The Symmetric Eigenvalue Problem (BR) **AM 988**

Pascovici, M. *(author)* Lagare Cu Alunecare (Sliding Bearings) (BR) **L 319**

Passage Shock
Comparison of Experimental and Computational Shock Structure in a Transonic Compressor Rotor (80-GT-81) **P 78**

Passive Thermal Control
Radiation and Free Convection Shield for Passive Thermal Control (80-WA/Sol-7) **SE 62**

Patankar, S. V. Combined Free and Forced Convection in Vertical Tubes with Radial Internal Fins **HT 566**; Laminar Mixed Convection in a Shrouded Fin Array **HT 559**

Path Planning
Optimum Path Planning for Mechanical Manipulators **DS 142**

Patula, E. J. Steady-State Temperature Distribution in a Rotating Roll Subject to Surface Heat Fluxes and Convective Cooling **HT 36**

Paul, B. Contact Pressures on Closely Conforming Elastic Bodies **AM 543**

Pauwels' Theory
An Analytical Model of Pauwels' Functional Adaptation Mechanism in Bone **BE 246**

Pavelic, V. An Exact Condensation Procedure for Chain-Like Structures Using a Finite Element-Transfer Matrix Approach (80-C2/DET-123) **MD 295**

Payoff Sensitivity
Payoff Sensitivity of Linear Quadratic Differential Games to Parameter Change **DS 36**

Pearson, J. T. Fluid-Inertia Effects in Radial Flow Between Oscillating, Rotating Parallel Disks (80-C2/Lub-48) **L 144**

Pedlosky, J. *(author)* Geophysical Fluid Dynamics (BR) **AM 684**

Pellet-Cladding Interaction
Pellet-Cladding Interaction of LMFBR Fuel Elements at Unsteady State **P 627**

Peltzer, R. D. Pressure and Vortex Shedding Patterns Around a Low Aspect Ratio Cylinder in a Sheared Flow at Transitional Reynolds Numbers **F 88**; (D) **F 95**; (AC) **F 96**

Pendulum Analogy
Pendulum Analogy for Nonlinear Fluid Oscillations in Spherical Containers **AM 769**

Pendulums
Pendulum With a Rotational Vibration (BN) **AM 200**

Penetration
A Model to Estimate Forces on Conical Penetrators Into Dry Porous Rock (81-APM-15) **AM 25**

Peng, C. S. P. Analysis and Design of Efficient Absorbers for Low-Temperature Desiccant Air Conditioners **SE 67**; Analysis and Design of Hybrid Double-Absorption Cooling Systems for Low Grade Thermal Energy Applications (80-WA/HT-44) **SE 331**

Pennock, G. R. Stress Fluctuation in High Speed Mechanisms (80-DET-21) **MD 736**

Penny-Shaped Cracks
The Penny-Shaped Crack and the Plane Strain Crack in an Infinite Body of Power-Law Material **AM 830**

Perbury Transmission
The Development of a Perbury Traction Transmission for Motor Car Applications (80-C2/DET-59) **MD 29**

Perdichizzi, A. Efficiency Prediction for Axial-Flow Turbines Operating with Nonconventional Fluids (81-GT-15) **P 718**

Perforated Plates
Added Mass and Hydrodynamic Damping of Perforated Plates Vibrating in Water **PVT 175**

Perini, L. L. An OTEC Pilot Plant Heat Engine **ERT 172**

Periodic Systems
Response of Periodic Systems to a Moving Load **AM 613**

Peri, M. Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (TB) **PVT 200**; On the Motion of an Axial Through Crack in a Pipe **PVT 281**; The Use of the Split Ring in Modeling Ductile Axial Crack Extension in Pipes **PVT 151**

Permeability Enhancement
Permeability Enhancement Using Explosive Techniques (80- PET-70) **ERT 110**

Permeable Membranes
A One-Dimensional Model of Simultaneous Hemodialysis and Ultrafiltration With Highly Permeable Membranes **BE 261**

Perpendicular Distances
Determination of Extreme Distances of a Robot Hand—Part I A General Theory (80-DET-57) **MD 631**

Perrone, N. *(editor)* Structural Mechanics Softwear Series—Vol. II (BR) **MD 558**

Perturbation Analysis
A Perturbation Analysis of Fluid-Structure Interactions in a Model Test System **AM 7**
Redesign of Structural Vibration Modes by Finite-Element Inverse Perturbation (80-GT-167) **P 319**

Perturbation Solutions
Perturbation Solutions of Transient Heat Transfer to a Porous Medium from a Fluid Stream (79-WA/HT-44) **HT 159**

Peterson, J. H. Train Brake and Track Capacity Requirements for the '80s **I 392**

Petroleum
Europe's Offshore Oil & Gas (BR) **ERT 200**
Lubrication Fundamentals (Mechanical Engineering Series, Vol. 3) (BR) **L 471**

Petroleum Fuels
Airblast Atomization of Alternative Liquid Petroleum Fuels under High Pressure Conditions **P 514**

Petruzzo, A. R. Conserving Energy in Saudi Arabia **P 519**

Pfeffer, R. Diffusion of Macromolecules Across the Arterial Wall in the Presence of Multiple Endothelial Injuries **BE 197**

Pflegl, G. A. Stress Analysis of O.D. Notched Thick-Walled Cylinders Subjected to Internal Pressure or Thermal Loads **PVT 76**

Phan-Thien, N. On an Elastic Theory of Friction (BN) **AM 438**; The Influence of Random Longitudinal Vibration on Channel and Pipe Flows of a Slightly Non-Newtonian Liquid (BN) **AM 661**; On the Mean Reynolds Equation in the Presence of Surface Roughness: Squeeze-Film Bearing **AM 717**; Similarity Solutions to the Nonisothermal, Two-Dimensional Squeezing Flow of a Viscous Fluid (BN) **AM 670**; On the Stokes Flow of Viscous Fluids Through Corrugated Pipes (Er) **AM 454**

Phase Change
Phase Change around a Circular Cylinder (TN) **HT 598**
Phase Change Around Insulated Buried Pipes: Quasi-Steady Method **ERT 201**

Phase Distribution Mechanisms
Phase Distribution Mechanisms in Turbulent Two-Phase Flow in Channels of Arbitrary Cross Section **F 583**

Phillippi, R. M. Fabrication, Testing, and Evaluation of Prototype Fluidic Capillary Pyrometer Systems **DS 308**

Phillips, J. W. Pulse Propagation in Fluid-Filled Elastic Curved Tubes **PVT 43**

Phillips, W. F. The Effect of Froude Number on Entrainment in Two-Dimensional Line Plumes (81-FE-6) **F 471**

Phoenix, S. L. Asymptotic Distributions for the Failure of Fibrous Materials Under Series-Parallel Structure and Equal Load-Sharing **AM 75**

Photographic Study
A Photographic Study of Cavitation in Jet Flow **F 14**

Photovoltaic Systems
Glass as Encapsulation for Low-Cost Photovoltaic Solar Arrays **SE 221**

Photovoltaic/Thermal Collectors
Analytical Predictions of Liquid and Air Photovoltaic/Thermal, Flat-Plate Collector Performance **SE 291**

Phuc-Nguyen-Duy
Fracture Toughness of 4130 Quenched and Tempered Steel **MT 55**

Physical Environment
Entropy: A New World View (BR) **SE 178**

Physical Movement
A Perspective on Robotics Research and This Issue (F) **DS 106**

Physical Systems
Energy-Based Modeling and Quasi Coordinates **DS 5**

Physiological Structure
Large Deformation Analysis of Some Soft Biological Tissues **BE 73**

Pichard, J. Hydrostatic Power Splitting Transmissions Design and Application Examples (80-GT-123) **P 168**

Pickard, D. K. An Application of Mixture Theory to Particulate Sedimentation (D) (AC) **AM 210**

Pierce, B. L. The Influence of Recent Heat Transfer Data on Gas Mixtures (He-Ar, H_2-CO_2) on Closed Cycle Gas Turbines (80-GT-89) **P 114**

Piercing
On One Analysis of Piercing by the Use of Flow Lines (TB) **I 233**
Piercing of Cylindrical Tubes (80-C2/PVP-150) **PVT 255**

Piezoelectric Bender Element
A Proportional Piezoelectric Electro-Fluidic Pneumatic Valve Design **DS 361**

Pilkey, W. The Balancing of Rotating Shafts by Quadratic Programming (80-DET-45) **MD 831**; *(editor)* Structural Mechanics Softwear Series—Vol. II (BR) **MD 558**

Pilkey, W. D. A Direct Integration Technique for the Transient Analysis of Rotating Shafts **MD 244**

Pilot Plants
Commercial Scale Equipment for Coal Conversion Processes **ERT 186**

Pinchak, A. C. Esophageal Accelerometer—Indicator of Cardiovascular Function **BE 160**

Pine, R. D. The Rotational Accuracy Characteristics of the Preloaded Hollow Roller Bearing (80-C2/Lub-23) **L 6**

Pinel, S. I. Performance of Computer-Optimized Tapered-Roller Bearings to 2.4 Million DN (80-C2/Lub-18) **L 13**

Pinions
Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform"—Part 2. Machine Setting Calculations for the Pinions of Formate and Helixform Gears **MD 89**

Pinkus, O.
Centrifugal Effects in Thrust Bearings and Seals Under Laminar Conditions (80-C2/Lub-21) **L 126**

Pinus, N. Z. *(author)* Turbulence in the Free Atmosphere (BR) **AM 988**

Pipe Flow
Fluid Power With Applications (BR) **F 484**
The Influence of Random Longitudinal Vibration on Channel and Pipe Flows of a Slightly Non-Newtonian Liquid (BN) **AM 661**
Laminar-Turbulent Transition in Pipeflow of Casson Model Fluids **ERT 318**
A Modified Form of the k-ϵ Model for Predicting Wall Turbulence **F 456**

Pipe Junctions
Approximate Elastic Stresses in Pipe Junctions with Chamfer Corners (TB) **PVT 107**

Pipe Systems
Nonlinear Static Analysis of Deep Ocean Mining Pipe—Part I: Modeling and Formulation (80-Pet-48) **ERT II**; Part II: Numerical Studies (80-Pet-49) **ERT 16**
Pipe Walls
On Circular Pipe Wall Vibratory Response Excited by Internal Acoustic Fields (80-WA/NC-13) **I 372**
Pipelaying
A Three-Dimensional Geometrically Nonlinear Analysis of Pipelaying in an Ocean Environment (TB) **PVT 201**
Pipeline-Riser Pipe System
Experimental Study of Two-Phase Normal Slug Flow in a Pipeline-Riser Pipe System (80-Pet-35) **ERT 67**
Pipelines
Analysis, Synthesis and Design of Hydraulic Servosystems and Pipelines (BR) **DS 73**
Field and Laboratory Studies for Evaluating Submarine Pipeline Frictional Resistance **ERT 250**
Finite Element Analysis With the State Variable Transfer Matrix and Geometric Nonlinearity for Marine Pipelines in Subsurface Tow (80-Pet-47) **ERT 26**
Long-Distance, High-Volume Transport of Coal by Slurry Pipeline (80-WRK/Pet-1) **ERT 322**
Model Studies on Immediate Settlement Behavior of Submarine Pipelines **ERT 254**
Vortex Amplifiers for Pipeline Protection **DS 358**
Pipes
A Computational Model for Improving Weld Residual Stresses in Small Diameter Pipes by Induction Heating (80-C2/PVP-152) **PVT 294**
Ductile Fracture of Pipes and Cylindrical Containers With a Circumferential Flaw **PVT 160**
On the Motion of an Axial Through Crack in a Pipe **PVT 281**
Nonlinear Transient Motion of Deep Ocean Mining Pipe **ERT 2**
Numerical and Experimental Simulations of Pseudoplastic Transient Pipe Flows **AM 1**
A Plastic Fracture Instability Analysis of Wall Breakthrough in a Circumferentially Cracked Pipe Subjected to Bending Loads **MT 194**
REVIEW: Turbulent Developing Pipe Flow **F 243**
Stability of Developing Flow in a Pipe—Nonparallel Effects (81-APM-13) **AM 243**
Stress Intensity Factors due to Residual Stresses in Thin-Walled Girth-Welded Pipes (79-PVP-30) **PVT 66**
The Use of the Split Ring in Modeling Ductile Axial Crack Extension in Pipes **PVT 151**
Piping
Experience With Simplified Inelastic Analysis of Piping Designed for Elevated Temperature Services (80-C2/NE-15) **PVT 267**
Piping Response to Steam-Generated Water Hammer **PVT 219**
Pressure Transient Analysis of Elbow-Pipe Experiments Using the PTA-2 Computer Code (80-C2/PVP-22) **PVT 33**
TRANS2A: An Unconditionally Stable Code for Thermal Transient Stress Analysis in Piping **PVT 50**
Piping Steels
Low Cycle Fatigue of Commercial Piping Steels in a BWR Primary Water Environment **MT 15**
Pistons
The Influence of Swirl on the Flow Characteristics of a Reciprocating Piston-Cylinder Assembly (D) (AC) **F 180, 181**
Thermal and Thermoelastic Analysis of Spheroidal Graphite Cast Iron and Light Alloy Pistons **MD 865**
Pitching
Optimum Balancing of Combined Pitching and Yawing Moments in High-Speed Machinery (80-DET-7) **MD 571**
Pitting
Effect of Asperity Interaction on Pitting in Rollers and Gears (80-C2/DET-36) **MD 482**
Effects of Hunting Gear Ratio Upon Surface Durability of Gear Teeth (80-C2/DET-35) **MD 227**
Some Factors Influencing the Pitting, Micro-Pitting (Frosted Areas) and Slow Speed Wear of Surface Hardened Gears (80-C2/DET-89) **MD 499**
Pitting Fatigue
Endurance and Failure Characteristics of Modified Vasco X-2, CBS 600 and AISI 9310 Spur Gears (80-C2/DET-58) **MD 506**; (D) **MD 514**; (AC) **MD 514, 515**
Pitts, J. R. The Effect of Receiver Optical Properties on Solar Thermal Electric Systems **SE 207**
Pizey, G. On the Prediction of Fusion Rate of Ice by Finite Element Analysis **HT 727**
Pizzo, P. P.
Age Softening Characteristics of Annealed 2-1/4 Cr-1 Mo Steel in the Temperature Range 424 to 704°C **MT 62**
Plain Journal Bearings
Hydrodynamic Aspects of Fatigue in Plain Journal Bearings (80-C2/Lub-19) **L 150**
Plain Milling
Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part I: Plain Milling With a Single-Toothed Helical Cutter (80-WA/Prod-4) **I 165**; Part II: Plain Milling With a Multi-Toothed Helical Cutter (80-WA/Prod-5) **I 174**
Plain Strain Cracks
The Penny-Shaped Crack and the Plane Strain Crack in an Infinite Body of Power-Law Material **AM 830**
Planar Diffusers
A Prediction Method for Planar Diffuser Flows (80-FE-5) **F 315**
Planar Hertz Contact
Planar Hertz Contact With Heat Conduction **AM 549**
Planar Linkages
A New Concept for Force Balancing Machines for Planar Linkages. Part 1: Theory (80-DET-73) **MD 637**; Part 2: Application to Four-Bar Linkage and Experiment (80-DET-74) **MD 784**
Planar Mechanisms
Design Sensitivity Analysis of Planar Mechanism and Machine Dynamics (80-DET-6) **MD 560**
The Simultaneous Analytical Synthesis of Mass and Spring Elements in Planar Mechanisms (80-DET-50) **MD 758**
Planar Motions
Kinematic Mappings Part 1: Classification of Algebraic Motions in the Plane (80-DET-16) **MD 585**; Part 2: Rational Algebraic Motions in the Plane (80-DET-17) **MD 712**
Planar Motion of a Rigid Body With a Friction Rotor (BN) **AM 205**
Plane Cracks
On Energy-Release Rates for a Plane Crack (81-WA/APM-3) **AM 525**
Plane Elastic Waves
Plane Elastic Waves Generated by Dynamical Loading Applied to Edge of Circular Hole (81-WA/APM-4 **AM 577**
Plane Elasticity
An Improvement of the Stress Calculations in Plane Elasticity by Use of Spline Functions (BN) **AM 972**
Plane Elastostatic Analysis
Analysis for an Embedded Ice Pressure Sensor **ERT 87**
Plane Problems
The Continuous Damage Theory of Brittle Materials. Part 1: General Theory **AM 809**; Part 2: Uniaxial and Plane Response Modes **AM 816**
Plane Strain Crack Growth
The Equivalence of the Final Stretch and Crack Tip Opening Angle Criteria for Plane Strain Crack Growth **MT 148**
Plane-Strain Problem
The Contact Problem for a Rigid Inclusion Pressed Between Two Dissimilar Elastic Half Planes **AM 104**
Plane Walls
Analytically Determined Fin-Tip Heat Transfer Coefficients **HT 18**
A Closed-Form Analytical Solution for Freezing Adjacent to a Plane Wall Cooled by Forced Convection **HT 586**
Planetary Transmissions
Adaption of Continuously Variable Transmissions to the Characteristic of a Driven Machine by Bicoupled Planetary Transmissions (80-C2/DET-92) **MD 41**
Plants
An OTEC Pilot Plant Heat Engine **ERT 172**
System Thermodynamics of Energy Conversion Plants for Geopressured Resources (80-Pet-31) **ERT 166**
Plasma-Spray Coatings
Low-Pressure Plasma-Spray Coatings for Hot-Corrosion Resistance (80-GT-98) **P 146**
Plastic
Finite-Element Solution of Elastic-Plastic Boundary-Value Problems (81-APM-17) **AM 69**
Glass Reinforced Plastic in Construction: Engineering Aspects By Leonard Halloway (BR) **MT 78**
Plastic Deformation
On the Applicability of Acoustoelasticity for Residual Stress Determination (81-WA/APM-8) **AM 791**
A Correct Definition of Elastic and Plastic Deformation and Its Computational Significance **AM 35**; (Er) **AM 686**; (D) **AM 983**; (AC) **AM 964**
On One Analysis of Piercing by the Use of Flow Lines (TB) **I 233**
Plastic Deformation Behavior of Mild Steel Along Orthogonal Trilinear Strain Trajectories in Three-Dimensional Vector Spacer of Strain Deviator **MT 287**
The Role of Microcracks in Large Plastic Deformation **I 431**
Three-Dimensional Finite Element Analysis of Elastic-Plastic Crack Problems (80-C2/PVP-36) **PVT 214**
Plastic Failure
A Criterion for Plastic Failure of Notched High Strength Steel Structures **MT 142**
Plastic Flow
Dynamic Analysis of a Torsion Test Specimen Including Heat Conduction and Plastic Flow **MT 201**
Plastic Fracture
A Plastic Fracture Instability Analysis of Wall Breakthrough in a Circumferentially Cracked Pipe Subjected to Bending Loads **MT 194**
Plastic Strain
Creep and Creep Recovery of 304 Stainless Steel at Low Stresses With Effects of Aging on Creep and Plastic Strains (81-WA/APM-17) **AM 785**
A Criterion for Low-Cycle Fatigue Failure Under Biaxial States of Stress **MT 1**
On Plastic Strain in Porous Materials (BN) **AM 976**
Plasticity
On the Characterization of Strain-Hardening in Plasticity (81-APM-26) **AM 205**
Constitutive Equations of Elastoplastic Materials With Elastic-Plastic Transition (D) **AM 211**
Engineering Plasticity by Mathematical Programming (BR) **MT 77**
On the Formulation of Strain-Space Plasticity With Multiple Loading Surfaces (81-WA/APM-20) **AM 773**
Plate Structures
Optimization in a Class of Hole Shapes in Plate Structures **AM 905**
Plate Theory
Design Formulas for Expansion Bellows **MD 881**
Plate-Type Solar Collectors
Optimization of Flow Passage Geometry for Air-Heating, Plate-Type Solar Collectors **SE 323**
Plates
Comments on Aleck's Stress Distribution in Clamped Plates (BN) **AM 442**
Diffraction of Elastic Waves by a Surface Crack on a Plate **AM 570**
Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate (D) **HT 824**; (AC) **HT 825**
Effects of Subject Position on Balance Platform Measurements (TB) **BE 213**
Exact Equations for the Large Inextensional Motion of Elastic Plates **AM 109**
Fatigue Crack Growth Behavior of Explosively-Bonded Clad Steel Plates **MT 36**
Force Convection Heat Transfer at an Inclined and Yawed Square Plate—Application to Solar Collectors (D) **HT 824**; (AC) **HT 825**
Heat Transfer from a Plate Elevated above a Host Surface and Washed by a Separated Flow Induced by the Elevation Step **HT 441**
How to Optimally Support a Plate (BN) **AM 207**
The Inelastic Line-Spring: Estimates of Elastic-Plastic Fracture Mechanics Parameters for Surface-

Cracked Plates and Shells (80-C2/PVP-109) **PVT 246**
Local Heat Transfer and Fluid Flow Characteristics for Airflow Oblique or Normal to Square Plate (D) **HT 824**; (AC) **HT 825**
Loss of Contact in the Vicinity of a Right-Angle Corner for a Simply Supported, Laterally Loaded Plate (81-WA/APM-11) **AM 597**
On the Polygon-Circle Paradox (BN) **AM 195**
Propagation of Elastic Pulses and Acoustic Emission in a Plate Part 1: Theory (81-APM-4) **AM 125**; Part 2: Epicentral Responses (81-APM-5) **AM 133**; Part 3: General Responses (81-APM-6) **AM 139**
Quasi-Square Hole With Optimum Shape in an Infinite Plate Subjected to In-Plane Loading (80-WA/DE-3) **MD 866**
Reexamination of Unsteady Fluid Dynamic Forces on a Two-Dimensional Finite Plate at Small Mach Numbers (D) (AC) **AM 982**
Scattering of Rayleigh Waves by a Plate Attached to a Half Space Through a Viscous Couplant (81-WA/APM-24) **AM 881**
Some Considerations on Thermal Shock Problems in a Plate **AM 113**; (Er) **AM 686**
Stress Concentrations in Cylindrically Orthotropic Composite Plates With a Circular Hole **AM 563**
Three-Dimensional Finite Element Analysis of Elastic-Plastic Crack Problems (80-C2/PVP-36) **PVT 214**
Unsteady Hydromagnetic Flow Near a Moving Porous Plate **AM 255**
Vibrations of Free Circular Plates Having Elastic Constraints and Added Mass Distributed Along Edge Segments (BN) **AM 196**
Play, D. Contact Temperature in Dry Bearings. Three-Dimensional Theory and Verification (80-C2/Lub-40) **L 243**; (D) (AC) **L 252**
Plenary Lecture
Friction—The Present State of Our Understanding **L 169**
The History of Tribology in America **L 323**
Role of Chemistry in the Lubrication of Concentrated Contacts **L 473**
Plenum Inlet Nozzles
An Investigation Into the Performance of Two Inlet Nozzles for Flow Measurement **F 67**; (D) (AC) **F 73**
Plesset, M. S. On the Equilibrium of Cavitation Nuclei in Liquid-Gas Solutions **F 425**; (D) (AC) **F 430**
Pletcher, R. H. A Study of Some Turbulence Models for Flow and Heat Transfer in Ducts of Annular Cross-Section **HT 146**
Plotkin, A. A Numerical Study of Nonaxisymmetric Stokesian Flow in a Circular Tube (81-WA/APM-16) **AM 459**
Plume Visibility
An Evaluation of Steam Injected Combustion Turbine Systems (80-GT-51) **P 13**; (D) **P 17**; (AC) **P 18**
Plumes
The Effect of Froude Number on Entrainment in Two-Dimensional Line Plumes (81-FE-6) **F 471**
Pneumatic Coupling
Analysis of a Pneumatically Coupled Cam-Actuated Mechanism **DS 290**
Pneumatic Pressure
Torque Characteristics of a 122-Centimeter Butterfly Valve With a Hydro/Pneumatic Actuator **F 396**
Pneumatic Rupture
Pneumatic Rupture of a Brittle Pipe: The Depressurization Transient Adjacent to the Ruptured Zone **PVT 287**
Point Contacts
An Experimental Evaluation of the Hamrock and Dowson Minimum Film Thickness Equation for Fully Flooded EHD Point Contacts (80-C2/Lub-38) **L 284**; (D) **L 294**
The Isothermal Elastohydrodynamic Lubrication of Spheres **L 547**; (D) (AC) **L 557**
Point Excitation
Point Admittance of Cylindrical Shells With and Without Ring-Stiffening (80-WA/NC-5) **I 293**
Point Masses
A One Dimensional Crystal With Nearest Neighbors Coupled Through Their Velocities (TE) **DS 293**
Point Trajectories
On the Principle of Transference in Three-Dimensional Kinematics (80-DET-88) **MD 652**
Polansky, G. F. System Thermodynamics of Energy Conversion Plants for Geopressured Resources (80-PET-31) **ERT 166**
Pole Placement
Improved Statistical Linearization for Analysis and Control of Nonlinear Stochastic Systems—Part I: An Extended Statistical Linearization Technique **DS 14**; Part II: Application to Control System Design **DS 22**
Poletti, G. Lubrication of a Melting Slider Under Nonisothermal Conditions **L 436**
Pollack, F. G. Temperature and Pressure Measurement Techniques for and Advanced Turbine Test Facility **P 468**
Polotzka, O. On a Bénard Convection in the Presence of Dielectrophoretic Forces (BN) **AM 980**
Polycarbonate Inserts
Polycarbonate Plastic Inserts for Spherical Acrylic Plastic Shells Under Hydrostatic Loading **I 90**
Polycrystals
Self-Consistent Determination of Time-Dependent Behavior of Metals (81-APM-11) **AM 41**
Polygon Circle
On the Polygon-Circle Paradox (BN) **AM 195**
Polymer Additives
A Photographic Study of Cavitation in Jet Flow **F 14**; (D) **F 370**; (AC) **F 371**
Polymeric Films
The Wear of Polymers Sliding on Polymeric Films Deposited on Rough Surfaces (80-C2/Lub-24) **L 266**
Polymers
Drag Reducing Polymer in Helicoidal Flow **F 491**
The Influence of Linear and Rotating Motions on the Friction of Polymers (80-C2/Lub-44) **L 503**; (D) **L 507**; (AC) **L 508**
Polynomials
Linkage Characteristic Polynomials: Definitions, Coefficients by Inspection (80-DET-8) **MD 578**
Polyphase Flows
Symposium Announcement and Call for Papers **F 13**
Pomeroy, B. D. High-Flux Solar Absorber Concept for Central Receiver Power Plants **SE 52**
Pools
Three-Directional Fluid Pool Seismic Sloshing Analysis (80-C2/PVP-49) **PVT 10**
Poon, C. C. An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) **P 759**; A Statistically Based Investigation of the Environmental and Cyclic Stress Effects on Fretting Fatigue **MT 218**
Popelar, C. H. Dynamic Crack Propagation in Precracked Cylindrical Vessels Subjected to Shock Loading **PVT 155**
Poplawsky, C. J. Mixed Layer Development in a Double-Diffusive, Thermohaline System **SE 351**
Porous Granular Rocks
The Effective Elastic Moduli of Porous Granular Rocks **AM 803**
Porous Layers
Locally and Nonlocally Reacting Flexible Porous Layers; A Comparison of Acoustical Properties (80-WA/NC-14) **I 302**
Porous Materials
Fluid Flow Through a Class of Highly-Deformable Porous Media Part I: Experiments With Air **F 432**; (D) **F 438**; (AC) **F 439**; Part II: Experiments With Water **F 440**
On Plastic Strain in Porous Materials (BN) **AM 976**
Porous Media
Natural Convective Boundary-Layer on Two-Dimensional and Axisymmetric Surfaces in High-Pr Fluids or in Fluid-Saturated Porous Media **HT 803**
Thermal Convection at Low Rayleigh Number from Concentrated Sources in Porous Media (Er) **HT 527**
Transient Fluid Flow in Porous Media: Inertia-Dominated to Viscous-Dominated Transition **F 339**
Porous Medium
Double Diffusive Instability in a Vertical Layer of a Porous Medium (TN) **HT 179**
An Exact Solution of the Sublimation Problem in a Porous Medium **HT 185**
Perturbation Solutions of Transient Heat Transfer to a Porous Medium from a Fluid Stream (79-WA/HT-44) **HT 159**
Porous Plates
Unsteady Hydromagnetic Flow Near a Moving Porous Plate **AM 255**
Porta, L. D. The Wear Coefficient—Magnitude, Scatter, Uses (80-C2/Lub-4) **L 188**; (D) **L 193**; (AC) **L 194**
Potassium
Effect of Sodium, Potassium, Magnesium, Calcium, and Chlorine on the High Temperature Corrosion of In-100, U-700, IN-792, and MAR M-509 (80-GT-150) **P 294**
Potential Flows
The Effect of Gravity on Certain Curved Channel Potential Flows (81-FE-19) **F 639**
Potential Well Energy
Homogeneous Nucleation and the Spinodal Line **HT 51**
Potter, R. E. The Design and Construction of Beaufort Sea Drilling Islands—Sag Delta 7 and 8 **ERT 208**; Experimental Study on Moving Loads on a Floating Sea Ice Road **ERT 96**
Powell, J. A. Efficient Laser Anemometer for Intra-Rotor Flow Mapping in Turbomachinery **P 424**; Laser Anemometer Measurements in a Transonic Axial Flow Compressor Rotor **P 430**
Power
Advances in Labyrinth Seal Aeroelastic Instability Prediction and Prevention (80-GT-151) **P 308**
Aerodynamic and Geometric Design Criteria for the Performance of Low Powered Vehicular Gas Turbines (80-GT-117) **P 158**
Airblast Atomization of Alternative Liquid Petroleum Fuels under High Pressure Conditions **I 514**
Application of Abrasive Coatings to Clearance Control in the Gas Turbine (D) **P 602**; (AC) **P 603**
Application of the Semi-Loof Thin Shell Element to the Analysis of Aircraft Engine Structures **P 511**
An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) **P 552**; (D) **P 558, 559**; (AC) **P 560**
Averaging Methods for Determining the Performance of Large Fans from Field Measurements (80-JPGC/Pwr-1) **P 345**
Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (D) **P 603**; (AC) **P 603, 604**
Blade Excitation by Elliptical Whirling in Viscous-Damped Jet Engines (80-GT-166) **P 326**
A Blockage Model for Centrifugal Compressor Impellers (81-GT-11) **P 698**
Boundary Layer Studies on Highly Loaded Cascades using Heated Thin Films and a Traversing Probe (80-GT-137) **P 237**
Calculations of Three-Dimensional, Viscous Flow and Wake Development in a Centrifugal Impeller **P 367**
Calculation of Windmilling Characteristics of Turbojet Engines (80-GT-50) **P 1**
The Civic: A Concept in Vortex Induced Combustion for the Solar Gemini 10 kW Gas Turbine (80-GT-54) **P 34**
The CIVIC—A Concept in Vortex Induced Combustion, Part II (81-GT-12) **P 708**
Closed-Cycle Gas Turbine Working Fluids (80-GT-135) **P 220**
The Combined Effect of Axial Velocity Density Ratio and Aspect Ratio on Compressor Cascade Performance (80-GT-138) **P 247**
Comparison of Experimental and Computational Shock Structure in a Transonic Compressor Rotor (80-GT-81) **P 78**
Compound Hybrid Geothermal-Fossil Power Plants: Thermodynamic Analyses and Site-Specific Applications **P 797**
Computation of Supercritical Compressor and Turbine Cascades with a Design Method for Transonic Flows (D) (AC) **P 604**
Conserving Energy in Saudi Arabia **P 519**
The Control of Hot Corrosion in Marine Gas Turbines (80-GT-126) **P 188**
Conventional Probes for the Relative Flow Measurement in a Turbomachinery Rotor Blade Passage **P 406**
A Correlation for Air Velocities in Cylindrical

Prechambers of Diesel Engines P 499
Creep Relaxation of Fuel Pin Bending and Ovalling Stresses (80-C2/NE-24) P 621
Creep Rupture Behavior of Selected Turbine Materials in Air, Ultra-High Purity Helium, and Simulated Closed Cycle Brayton Helium Working Fluids (80-GT-173) P 331
Demonstration of a Unified Approach to the Balancing of Flexible Rotors (80-GT-87) P 101
The Design, Development and Operation of Gas Turbine Radio Telemetry Systems P 473
A Detailed Transient Model of an OTEC Evaporator P 539
Development of a Large-Scale Wind Tunnel for the Simulation of Turbomachinery Airfoil Boundary Layers (81-GT-6) P 678
The Development of a Substitute Bird Model (81-GT-23) P 725
EBR-II Metallic Driver Fuel—A Live Option (80-C2/NE-23) P 612
The Effect of Aerodynamic Phase Lag on the Twin Vibration Mode Model of Aeroengine Fan Flutter (80-GT-166) P 313
The Effect of the Axial Velocity Density Ratio on the Aerodynamic Coefficients of Compressor Cascades (80-GT-134) P 210
The Effect of Bevel Angle on Safety Valve Vent-Pipe Systems P 587
Effect of Sodium, Potassium, Magnesium, Calcium, and Chlorine on the High Temperature Corrosion of In-100, U-700, IN-792, and MAR M-509 (80-GT-150) P 294
Effects of Coolant Air Inlet Conditions on Turbulent Flow Between a Turbine Disk and its Casing (79-GT-35) P 637
Effects of Free-Stream Turbulence Intensity and Frequency on Heat Transfer to Turbine Blading (80-GT-79) P 60
Efficiency Prediction for Axial-Flow Turbines Operating with Nonconventional Fluids (81-GT-15) P 718
Efficient Laser Anemometer for Intra-Rotor Flow Mapping in Turbomachinery P 424
An Evaluation of Steam Injected Combustion Turbine Systems (80-GT-51) P 13
Experimental Analysis Methods for Unsteady Flows in Turbomachines P 415
An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large Scale Turbine Blade Cascade (D) (AC) P 602
Experiments on the Vibration Characteristics of a Rotor With Flexible, Damped Support (80-GT-124) P 174
An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) P 759
Fan/Foundation Interaction—A Simplified Calculation Procedure P 805
Finite Element Methods for Transonic Blade-to-Blade Calculation in Turbomachines (81-GT-5) P 665
Flow Instability at the Inlet of a Centrifugal Compressor P 451
Flutter Spectral Measurements Using Stationary Pressure Transducers P 461
A Furnace Wall Ash Monitoring System for Coal Fired Boilers (80-WA/Fu-1) P 532
Gas Turbine Engine Disk Retirement-for-Cause: An Application of Fracture Mechanics and NDE (80-GT-127) P 198
The Hybrid Diffuser (80-GT-136) P 229
Hydrostatic Power Splitting Transmissions Design and Application Examples (80-GT-123) P 168
Influence of Acceleration on the Critical Speed of a Jeffcott Rotor (80-GT-88) P 108
Influence of Mach Number and End Wall Cooling on Secondary Flows in a Straight Nozzle Cascade (80-GT-52) P 257; (D) P 263; (AC) P 264
The Influence of Premixed Combustion Flame Stabilizer Geometry on Flame Stability and Emissions (81-GT-26) P 749
The Influence of Recent Heat Transfer Data on Gas Mixtures (He-Ar, H_2-CO_2) on Closed Cycle Gas Turbines (80-GT-89) P 114
Interferometric Measurements in a Turbine Cascade Using Image-Plane Holography (80-GT-91) P 124
The Interrelationship between Soot and Fuel NO_x Control in Gas Turbine Combustors (80-GT-76) P 43
Investigations of an Axial Compressor End-Wall Boundary Layer Prediction Method (80-GT-53) P 20
Laser Anemometer Measurements in a Transonic Axial Flow Compressor Rotor P 430
Laser-Optical Blade Tip Clearance Measurement System P 457
LMFBR Loss of Flow Simulations in the Sodium Loop Safety Facility P 605
Long Arc Shrouding—A Reliability Improvement for Untuned Steam Turbine Blading (78-JPGC/Pwr-12) P 522; (D) P 527, 528, 530; (AC) P 528, 529, 530
Low-Pressure Plasma-Spray Coatings for Hot-Corrosion Resistance (80-GT-98) P 146
A Mathematical Model for Heat Transfer in Combustion Chambers of Steam Generators P 545
A Mathematical Model for the Stirling Engine Cycle P 505
Mean Flow Measurements Near the Plane of an Open Rotor Operating with an Inlet Velocity Gradient P 445
Measurement Methods in Rotating Components of Turbomachinery P 373
Measurement of Turbine Rotor Blade Flows P 400
Measurements of the Mean Flow Velocity and Velocity Fluctuations at the Exit of an FC Centrifugal Fan Rotor P 393
A New Approach for Erosion Prediction Due To Fly Ash (80-GT-96) P 265
Nonaxisymmetric Blade Row Interaction in Axial Turbomachines (80-GT-133) P 201
NO_x Removal Process by Injection of NH_3 and H_2O_2 in Gas Turbine Exhaust Gas P 589
The Nuclear Closed-Cycle Gas Turbine (HTGR-GT)—Dry Cooled Commercial Power Plant Studies (80-GT-82) P 89
The Nutating Traction Drive (80-GT-99) P 154
Once-Through Cooling Potential of the Middle and Lower Mississippi River During Low Flow Conditions P 594
Optical Advances in Laser Transit Anemometry P 438
Outline of Plan for Advanced Reheat Gas Turbine (81-GT-28) P 772
Pattern Factor Improvement in the F-100 Primary Combustion System (81-GT-25) P 739
Pellet-Cladding Interaction of LMFBR Fuel Elements at Unsteady State P 627
Performance and Air Pollutant Emissions of an Experimental Water/Residual Oil Emulsion Burner in a Commercial Boiler P 788
Performance of a Multiphase Boiling MHD Generator P 582
Preliminary Design Analysis of a Catalytic Ceramic Structure in a Turbine Combustor (78-WA/GT-10) P 338
On the Pressure Losses Due to the Tip Clearance of Centrifugal Blowers (80-GT-139) P 271
Redesign of Structural Vibration Modes by Finite-Element Inverse Perturbation (80-GT-167) P 319
Rotordynamic Instability in Centrifugal Compressors—Are All the Excitations Understood? (80-GT-149) P 288
Separation Efficiency of a Cyclone Separator with a Turbulence-Suppressing Rotating-Insert (80-IPC-Pwr-11) P 566
Some Effects of Using Water as a Test Fluid in Fuel Nozzle Spray Analysis (80-GT-90) P 118
Soot Formation in a Turbulent Swirl Stabilized Laboratory Combustor (80-GT-77) P 49
Stalling Pressure Rise Capability of Axial Flow Compressor Stages (81-GT-3) P 645
A Statistical Investigation of Microstructure and Crack Growth in Titanium Alloys (80-GT-125) P 180
Structure and Decay Characteristics of Turbulence in the Near and Far-Wake of a Moderately Loaded Compressor Rotor-Blade (80-GT-95) P 131
A Study on Centrifugal Impeller and Diffuser Flow (81-GT-9) P 688
A Study of the Viscous and Nonadiabatic Flow in Radial Turbines P 481
Superhybrid Composite Blade Impact Studies (81-GT-24) P 731
Techniques for Aerodynamic and Turbulence Measurements in Turbomachinery Rotors P 374
Temperature and Pressure Measurement Techniques for an Advanced Turbine Test Facility P 468
Ten Years of Digital Computer Control of Combustion Turbines (80-GT-78) P 54
Thermal Expansion Accommodation in a Jet Engine Frame P 776
The Thermodynamic Performance of Two Combined Cycle Power Plants Integrated with Two Coal Gasification Systems P 572
Transonic Flow Computations in Cascades Using Finite Element Method (81-GT-4) P 657
Turbomachinery Design Considerations for the Nuclear HTGR-GT Power Plant (80-GT-80) P 65
Utility Operations: An Effective and Economic Approach to Operator Training (80-JPGC/Pwr-2) P 348
The Vibration Isolating Properties of Uncentralized Squeeze-Film Damper Bearings Supporting a Flexible Rotor P 781
Vibration in Nuclear Heat Exchangers Due to Liquid and Two-Phase Flow (80-C2/NE-4) P 358
Vorticity Modeling of Blade Wakes behind Isolated Annular Blade-Rows: induced Disturbances in Swirling Flows (80-GT-140) P 279
Wake Behavior in the Presence of Free Stream Turbulence P 490
Water-Cooled Gas Turbine Monometallic Nozzle Development (80-GT-97) P 141
Water Tempered Cleaning Medium for Soot-blowers P 581

Power Fluidics
Developments in Power Fluidics for Application in Nuclear Plant DS 342

Power Generation
Overview of Wind Energy Systems: Issues in Development and Application SE 3

Power-Law Material
The Penny-Shaped Crack and the Plane Strain Crack in an Infinite Body of Power-Law Material AM 830

Power Loss
Calculation of Cylindrical Worm Gear Drives of Different Tooth Profiles (80-C2/DET-23) MD 73
Effect of Geometry and Operating Conditions on Spur Gear System Power Loss (80-C2/DET-39) MD 151

Power Plants
An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) P 552; (D) P 558, 559; (AC) P 560
Compound Hybrid Geothermal-Fossil Power Plants: Thermodynamic Analysis and Site-Specific Applications P 797
The Effect of Receiver Optical Properties on Solar Thermal Electric Systems SE 207
The Effects of Regional Insolation Differences upon Advanced Solar Thermal Electric Power Plant Performance and Energy Costs (79-WA/Sol-1) SE 213
High-Flux Solar Absorber Concept for Central Receiver Power Plants SE 52
Mini-OTEC Operational Results SE 233
The Nuclear Closed-Cycle Gas Turbine (HTGR-GT)—Dry Cooled Commercial Power Plant Studies (80-GT-82) P 89
The Thermodynamic Performance of Two Combined Cycle Power Plants Integrated with Two Coal Gasification Systems P 572
Turbomachinery Design Considerations for the Nuclear HTGR-GT Power Plant (80-GT-80) P 65

Prakash, C. Combined Free and Forced Convection in Vertical Tubes with Radial Internal Fins HT 566

Prasad, B. Optimum Design of an Abrasive Disk MD 818; On the Stability of a Composite Beam With Initial Stress to Moving Loads (81-APM-25) AM 388

Preloading
The Rotational Occuracy Characteristics of the Preloaded Hollow Roller Bearing (80-C2/Lub-23) L 6

Premixed Combustion Systems
The Influence of Premixed Combustion Flame Stabilizer Geometry on Flame Stability and Emissions (81-GT-26) P 749

Pressure
Averaging Methods for Determining the Performance of Large Fans from Field Measurements (80-

JPGC/Pwr-1) P 345
Cavitation in a Short Bearing With Pressurized Lubricant Supply (80-C2/Lub-47) L 337; (D) L 346; (AC) L 347
Destabilization of Film Boiling Due to Arrival of a Pressure Shock: Part I Experimental HT 459
Effect of Plenum Length and Diameter on Turbulent Heat Transfer in a Downstream Tube and on Plenum-Related Pressure Losses HT 415
On the Pressure Losses Due to the Tip Clearance of Centrifugal Blowers (80-GT-139) P 271
Pressure and Vortex Shedding Patterns Around a Low Aspect Ratio Cylinder in a Sheared Flow at Transcritical Reynolds Numbers (D) F 373; (AC) F 374
Pressure and Vortex Shedding Patterns Around a Low Aspect Ratio Cylinders in a Sheared Flow at Transitional Reynolds Numbers F 88; (D) F 95; (AC) F 96

Pressure Distribution
A Cavitation Algorithm (80-C2/Lub-54) L 350; (D) (AC) L 354
A Method to Measure Contact Pressure Between Metallic Surfaces by Changes in Surface Roughness (80-WA/Prod-18) I 210

Pressure Gradient
Numerical and Experimental Simulations of Pseudoplastic Transient Pipe Flows AM 1

Pressure Loss
Experimental Study of Oil-Water Flow in Inclined Pipes (80-Pet-51) ERT 56

Pressure Measurement
Temperature and Pressure Measurement Techniques for an Advanced Turbine Test Facility P 468

Pressure Nozzles
Drop-Size Distributions of Newtonian and Bingham Liquid Sprays Produced by Fan-Jet Pressure Nozzles With and Without the Preorifice (81-PID-3) I 402

Pressure Probe
A Four Hole Pressure Probe for Fluid Flow Measurements in Three Dimensions F 590

Pressure Profiles
An Experimental Investigation of the Pressures at the Edge of a Gas Bearing Pocket L 593

Pressure Recovery
The Hybrid Diffuser (80-GT-136) P 229

Pressure Relief Systems
Design of Discharge Piping for Pressure Relief Systems (80-Pet-59) ERT 190

Pressure Sensor
Ice Pressure Sensor Inclusion Factors ERT 82

Pressure Transducers
Flutter Spectral Measurements Using Stationary Pressure Transducers P 461

Pressure Undershoot
Correlation of Pressure Undershoot During Hot-Water Depressurization HT 52

Pressure Vessel and Piping Codes
Background of New Code Rules for Integral Flat Heads with a Large, Central Nozzle PVT 116
Recent Advances in the ASME Section VIII Division 1 and 2 Pressure Vessel Codes PVT 119

Pressure Vessel Research Committee
Needed: More Welding Science in Engineering Education PVT 125
New WRC Monograph PVT 125
Recent WRC Bulletins PVT 126; PVT 208
Welding Research Briefs PVT 125; PVT 207

Pressure Vessel Steel
Evaluation of Radiation Damage in Reactor Pressure Vessel Steel by Elastic-Plastic Fracture Mechanics MT 276

Pressure Vessel Technology
Acoustic Emission Monitoring During Rupture Test of Pressure Vessel and Laboratory Fracture Test PVT 191
Acoustic Loading Effects on Oscillating Rod Bundles (80-C2/PVP-124) PVT 322
Added Mass and Hydrodynamic Damping of Perforated Plates Vibrating in Water PVT 175
An Analytical Assessment of the Effects of Residual Stresses and Fracture Properties on Service Performance of Various Weld Repair Processes PVT 373
Analytical/Experimental Correlation of a Nonlinear System Subjected to a Dynamic Load PVT 94
Analytical Puncture Study of Circular Metal Plates (D) PVT 206
Application of the Tearing-Mode Crack-Growth Instability Theory to a Cracked Pressure Vessel Nozzle PVT 59
Approximate Elastic-Plastic Analysis of Intersecting Equal Diameter Cylindrical Shells (TB) PVT 111
Approximate Elastic Stresses in Pipe Junctions with Chamfer Corners (TB) PVT 107
Approximate Elastic Stresses in a Tee Branch Pipe Connection Under Internal Pressure (TB) PVT 104
Background of New Code Rules for Integral Flat Heads with a Large, Central Nozzle PVT 116
On the Buckling Design of Spherical Shells (81-PVP-32) PVT 261
Computation of Seismic Response from Higher Frequency Modes (80-C2/PVP-50) PVT 16
A Computational Method for Free Surface Hydrodynamics PVT 136
A Computational Model of Backlay Welding for Controlling Residual Stresses in Welded Pipes PVT 226
A Computational Model for Improving Weld Residual Stresses in Small Diameter Pipes by Induction Heating (80-C2/PVP-152) PVT 294
Corrosion Fatigue Crack-Growth Behavior of HY-130 Steel and Weldments PVT 314
Creep Rupture Bending Test of 20 Percent Cold-Prestrained Ni-Fe-Cr Alloy Straight Tubes at 1100 F (593 C) (80-C2/PVP-18) PVT 337
Ductile Fracture of Pipes and Cylindrical Containers With a Circumferential Flaw PVT 160
Dynamic Crack Propagation in Precracked Cylindrical Vessels Subjected to Shock Loading PVT 155
Evaluation of Thermal Conductivity in Layered Vessels (82-PVP-1) PVT 307
Experience With Simplified Inelastic Analysis of Piping Designed for Elevated Temperature Services (80-C2/NE-15) PVT 267
Experimental Determination of the Propagation Pressure of Circular Pipes (82-PVP-2) PVT 328
A Finite Element Formulation for Fluid-Structure Interaction in Three-Dimensional Space PVT 183
A Finite Element Model for Elastic and Slip Response of Fusion Magnets (D) PVT 127
Flow Velocity Dependence of Damping in Tube Arrays Subjected to Liquid Cross-Flow PVT 130
Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe (TB) PVT 200
Further Studies of the Interface Boundary Conditions for Bolted Flanged Connections PVT 240
A Hybrid Numerical Method for Homogeneous Equilibrium Two-Phase Flows in One Space Dimension (80-C2/PVP-51) PVT 20
The Inelastic Line-Spring: Estimates of Elastic-Plastic Fracture Mechanics Parameters for Surface-Cracked Plates and Shells (80-C2/PVP-109) PVT 246
On the Motion of an Axial Through Crack in a Pipe PVT 281
Near-Contact Explosive Forming PVT 366
Nonlinear Dynamic Analysis of a Structure Subjected to Multiple Support Motions (80-C2/PVP-52) PVT 27
Panel on Computer Program Verification and Qualification PVT 209
Piercing of Cylindrical Tubes (80-C2/PVP-150) PVT 255
Piping Response to Steam-Generated Water Hammer PVT 319
A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part I: J-Integral Analysis (80-WA/PVP-3) PVT 352; Part II: Experimental Verification on a Type 304 Stainless Steel Pipe (80-WA/PVP-4) PVT 359
Pneumatic Rupture of a Brittle Pipe: The Depressurization Transient Adjacent to the Ruptured Zone PVT 287
Polycarbonate Plastic Inserts for Spherical Acrylic Plastic Shells under Hydrostatic Loading I 90
Pressure Transient Analysis of Elbow-Pipe Experiments Using the PTA-2 Computer Code (80-C2/PVP-22) PVT 33
Pulse Propagation in Fluid-Filled Elastic Curved Tubes PVT 43
Recent Advances in the ASME Section VIII Division 1 and 2 Pressure Vessel Codes PVT 119
Residual Stress Redistribution Caused by Notches and Cracks in a Partially Autofrettaged Tube (81-PVP-6) PVT 302
A Sensitivity Study on Numerical Analysis of Dynamic Girth Crack Propagation (80-C2/PVP-107) PVT 189
Stress Analysis of O.D. Notched Thick-Walled Cylinders Subjected to Internal Pressure or Thermal Loads PVT 76
Stress Intensity Factors Due to Residual Stresses in Thin-Walled Girth-Welded Pipes (79-PVP-30) PVT 66
A Structural Priority Approach to Fluid-Structure Interaction Problems PVT 142
Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) PVT 85
Thoughts on a Code of Practice for Forged High-Pressure Vessels of Monobloc Design PVT 2
Three Dimensional Finite Element Analysis of Elastic-Plastic Crack Problems (80-C2/PVP-36) PVT 214
A Three-Dimensional Geometrically Nonlinear Analysis of Pipelaying in a Ocean Environment (TB) PVT 201
Three-Directional Fluid Pool Seismic Sloshing Analysis (80-C2/PVP-49) PVT 10
TRANS2A: An Unconditionally Stable Code for Thermal Transient Stress Analysis in Piping PVT 50
Transient Cavitation in Fluid-Structure Interactions (80-C2/PVP-23) PVT 345
Trial Application of the Draft Structural Design Criteria for Breeder Reactor Core Components to a Typical Blanket Assembly Duct PVT 380
The Use of the Split Ring in Modeling Ductile Axial Crack Extension in Pipes PVT 151
Vibrations of Square and Hexagonal Cylinders in a Liquid PVT 233

Pressurized Fluidized Bed Combustors
An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) P 552; (D) P 558, 559; (AC) P 560

Prestrains
Flow Stresses of Prestrained Annealed OFHC Copper and SAE 1018 Steel MT 188

Pretwisted Beams
Torsion of Pretwisted Beams Due to Axial Loading (D) AM 679; (AC) AM 680

Prevost, J. H. Finite-Element Solution of Elastic-Plastic Boundary-Value Problems (81-APM-17) AM 69

Priddy, W. J. Effects of Free-Stream Turbulence Intensity and Frequency on Heat Transfer to Turbine Blading (80-GT-79) P 80

Priestman, G. H. Developments in Power Fluidics for Application in Nuclear Plant DS 342

Primrose, E. J. F. Equations for Four-Bar Line-Envelopes (80-DET-40) MD 743; (D) (AC) MD 749

Priorities
Solar Priorities (Ed) SE 1

Prismatic Asparity Model
Rolling Bearing Life Modifying Factors for Film Thickness, Surface Roughness, and Friction (80-C2/Lub-16) L 509; (D) L 516-518; (AC) L 519

Prismatic Bars
Conduction Shape Factors for Certain Multi-Hole Prismatic Bars (TN) HT 821

Prismatic Columns
On the Analysis of Uniform Prismatic Columns (80-C2/DET-113) MD 274

Probabilistic Models
Probabilistic Models in Computer Automated Slider-Crank Function Generator Design (80-DET-45) MD 835

Probe Perturbation
An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) P 759

Process Water Heating
Design Procedure and Applicaton of Solar-Assisted Series Heat Pump Systems SE 135

Product Forms
The Effect of Product Form Upon Fatigue-Crack Growth Behavior in Alloy 718 (81-Mat-1) MT 234

Production Management
Manufacturing Systems Engineering (BR) **DS 423**
Programmed Computers
Adaptive Control Optimization of Grinding (D) **I 352**; (AC) **I 353**
Promisel, N. *(reviewer)* Materials in World Perspective (BR) **MT 78**
Propagation
Gas-Driven Fracture Propagation **AM 757**
Propagation Pressure
Experimental Determination of the Propagation Pressure of Circular Pipes (82-PVP-2) **PVT 326**
Propeller Blades
Resonant Whirling of Aircraft Propeller-Engine Systems **AM 929**
Property Variations
The Influences of Property Variations on Natural Convection from Vertical Surfaces **HT 609**
Propulsion
Hydrostatic Power Splitting Transmissions Design and Application Examples (80-GT-123) **P 168**
Propulsion Modules
The Development and Testing of the Space Shuttle Reaction Control System (78-WA/Aero-20) **I 137**
Prosthetic Occluder Heart Valves
On the Hemolytic and Thrombogenic Potential of Occluder Prosthetic Heart Valves From In-Vitro Measurements **BE 83**
Prosthetic Valves
Experimental Measurements of the Flow-Induced Shear Stress Distribution in the Vicinity of Prosthetic Heart Valves **BE 267**
Proximal Tibia
Analysis of Model Variables and Fixation Post Length Effects on Stresses Around a Prosthesis in the Proximal Tibia **BE 239**
Prussing, J. E. Stabilization of an Unstable Linear System by Parametric White Noise (BN) **AM 198**
Pseudoplastic Fluid
Numerical and Experimental Simulations of Pseudoplastic Transient Pipe Flows **AM 1**
Pu, S. L. Residual Stress Redistribution Caused by Notches and Cracks in a Partially Autofrettaged Tube (81-PVP-6) **PVT 302**
Pulling
Residual Stresses of Czochralski-Grown Crystal **AM 866**
Pulsating Torsion
Dynamic Stability of Truncated Conical Shells Under Pulsating Torsion **AM 391**
Pulse Control
Optimum Pulse Control of Flexible Structures **AM 619**
Pulse-Decay Method
Pulse-Decay Method for Measuring the Thermal Conductivity of Living Tissues **BE 253**
Pulse Propagation
Pulse Propagation in Fluid-Filled Elastic Curved Tubes **PVT 43**
Pulse Wave Propagation
Mechanics of Blood Flow **BE 102**
Pulsed Core Jet
Velocity Field and Entrainment of a Pulsed Core Jet **F 605**
Pumping Rings
Analysis and Design of a Uniform Clearance, Pumping-Ring Rod Seal for the Sterling Engine **MD 67**
Pumping Systems
The Stability of Pumping Systems—The 1980 Freeman Scholar Lecture **F 193**
Pumps
Correlations of Thermodynamic Effects for Developed Cavitation **F 534**
Punch Coefficient
A Deep Drawing Test for Determining the Punch Coefficient of Friction (80-WA/Prod-10) **I 197**
Puncture Study
Analytical Puncture Study of Circular Metal Plates (D) **PVT 206**
Purnell, J. G. Performance of a Multiphase Boiling MHD Generator **P 582**
Pusey, H. C. *(author)* An International Survey of Shock and Vibration Technology (BR) **MD 685**
Pyrometers
Fabrication, Testing, and Evaluation of Prototype Fluidic Capillary Pyrometer Systems **DS 308**

Q

QSD
The Hammer QSD-Quick Stop Device for High Speed Machining and Rubbing (80-WA/PROD-13) **I 13**
Quadratic Programming
The Balancing of Rotating Shafts by Quadratic Programming (80-DET-45) **MD 831**
Quadrature Form
Viscoelastic Responses of Finite Bodies by Quadrature Form of Correspondence Principle (BN) **AM 206**
Quasi Coordinates
Energy-Based Modeling and Quasi Coordinates **DS 5**
Quasi-Steady-State Temperature
Quasi-Steady-State Temperature Distribution in Periodically Contacting Finite Regions **HT 739**

R

Raabe, J. A Photographic Study of Cavitation in Jet Flow (D) **F 370**; (AC) **F 371**
Rabinowicz, E. The Wear Coefficient—Magnitude, Scatter, Uses (80-C2/Lub-4) **L 188**; (D) **L 193**; (AC) **L 194**
Rabins, M. J. A Ten-Year Retrospective On This Journal (F) **DS 1**
Racing Shells
Why Sliding Seats and Short Stroke Intervals are Used for Racing Shells **BE 151**
Radhakrishnan, T. On-Line Hole Quality Evaluation for Drilling Composite Material Using Dynamic Data (80-WA/PROD-16) **I 119**
Radhakrishnan, V. Functional Assessment of the Grinding Wheel Surface Characteristics by Turbulence Amplifier **I 99**; On Some Aspects of Surface Formation in ECM **I 341**
Radhakrishnan, V. M An Analysis of Grain Size and Yield Stress Effects on Stress at Fatigue Limit and Threshold Stress Intensity Factor **MT 229**
Radial Flow
Fluid-Inertia Effects in Radial Flow Between Oscillating, Rotating Parallel Disks (80-C2/Lub-48) **L 144**
Radial Load
Technology Transfer in the Determination of Torque Characteristics of R4A Ball Bearings at High Speeds With Radial Load (80-C2/DET-82) **MD 264**
Radial Oscillations
On the Radial Oscillations of Multiple Gas Bubbles in an Incompressible Liquid **AM 727**
Radial Stress
On the Physical Basis of Auerbach's Law (TB) **MT 183**
Radial Trucks
A Comparison of the Stability and Curving Performance of Radial and Conventional Rail Vehicle Trucks **DS 191**
Radial Turbines
A Study of the Viscous and Nonadiabatic Flow in Radial Turbines **P 481**
Radiating Gas
On the Propagation of Weak Discontinuities Along Bicharacteristics in a Radiating Gas **AM 737**
Radiation
An Algorithm for Calculating Monthly-Average Radiation on Inclinded Surfaces **SE 29**
Application of the P-1 Approximation to Radiative Heat Transfer in a Nongray Medium (TN) **HT 182**
Effective Thermal Conductivity for Combined Radiation and Free Convection in an Optically Thick Heated Fluid Layer **HT 114**
Evaluation of Radiation Damage in Reactor Pressure Vessel Steel by Elastic-Plastic Fracture Mechanics **MT 276**
Nongray Particulate Radiation in an Isothermal Cylindrical Medium **HT 121**
Radiation and Free Convection Shield for Passive Thermal Control (80-WA/Sol-7) **SE 62**
Radio Telemetry Systems
The Design, Development and Operation of Gas Turbine Radio Telemetry Systems **P 473**
Raghavan, K. S. Inelastic Dynamic Response of Rectangular Plates by Finite Elements (BN) **AM 441**
Raghuraman, P. Analytical Predictions of Liquid and Air Photovoltaic/Thermal, Flat-Plate Collector Performance **SE 291**
Ragland, W. A. LMFBR Loss of Flow Simulations in the Sodium Loop Safety Facility **P 605**
Ragsdell, K. M. Optimization: The Future of Design (CR) **MD 678**
Rahman, J. F. Functional Assessment of the Grinding Wheel Surface Characteristics by Turbulence Amplifier **I 99**
Raibert, M. H. Hybrid Position/Force Control of Manipulators **DS 126**
Rail Transit Vehicles
Lateral Dynamics of a Rail Transit Vehicle: A Comparison of Experimental and Theoretical Results **DS 39**
Rail Vehicles
Guideway-Suspension Tradeoffs in Rail Vehicle Systems **DS 237**
Stability and Curving Mechanics of Rail Vehicles (80-WA/DSC-15) **DS 181**
Raj, D. Measurements of the Mean Flow Velocity and Velocity Fluctuations at the Exit of an FC Centrifugal Fan Rotor **P 393**
Raj, R. Wake Behavior in the Presence of Free Stream Turbulence **P 490**
Rajagopal, S. A Deep Drawing Test for Determining the Punch Coefficient of Friction (80-WA/Prod-10) **I 197**
Rajaiah, K. On the Polygon-Circle Paradox (BN) **AM 195**; Quasi-Square Hole With Optimum Shape in an Infinite Plate Subjected to In-Plane Loading (80-WA/DE-3) **MD 866**
Rajkumar, B. R. Laboratory Investigation of Wheel Rail Contact Stresses for U.S. Freight Cars (80-WA/RT-8) **I 246**
Ramachandra, K. Conformity Factor In Wilhaber-Novikov Circular-Arc Gears (80-C2/DET-15) **MD 134**
Ramaiah, G. K. Buckling of Polar Orthotropic Annular Plates Under Uniform Inplane Compressive Forces (DDM) **AM 643**
Ramakrishnan, C. V. A Finite Element Method for the Elastic Contact Problems **I 456**
Ramalingam, S. Abrasive Wear in Machining: Experiments With Materials of Controlled Microstructure **MT 151**; On the Rowe-Spick Shear Angle Relations for Orthogonal Machining **I 79**
Ramarajan, V. Inception of Cavitation From a Backward Facing Step **F 288**
Ramkrishna, D. Heat Transfer in a Capillary Flow Emerging from a Reservoir **HT 42**
Rammurthy, Y. N. Model Studies on Immediate Settlement Behavior of Submarine-Pipelines **ERT 254**
Ramsey, J. W. Effect of Plenum Length and Diameter on Turbulent Heat Transfer in a Downstream Tube and on Plenum-Related Pressure Losses **HT 415**; The Transition from Natural-Convection-Controlled Freezing to Conduction-Controlled Freezing **HT 7**
Rand, J. L. The Development of a Substitute Bird Model (81-GT-23) **P 725**
Randall, D. E. Mean Wind Loading on Parabolic-Trough Solar Collectors **SE 313**
Randall, S. E. Optimum Vibration Absorbers for Linear Damped Systems **MD 908**
Random Loading
Fatigue Damage of the Locomotive Suspension Elements Under Random Loading (80-WA/DE-7) **MD 871**
Rane, A. G. Convective Heat Transfer to Turbulent Droplet Flow in Circular Tubes **HT 679**
Rankin, G. W. Developing Region of Laminar Jets With Parabolic Exit Velocity Profiles (81-FE-3) **F 322**
Rao, A. K. On the Polygon-Circle Paradox (BN) **AM 195**
Rao, G. V. Model Studies on Immediate Settlement Behavior of Submarine Pipelines **ERT 254**
Rao, J. S. Application of the Reissner Method to a Timoshenko Beam (BN) **AM 672**
Rao, K. M. Some Observations in the Behavior of Laminated Composite Beams (BN) **AM 431**

Rao, K. P. A Finite Element Model for Elastic and Slip Response of Fusion Magnets (D) **PVT 127**
Rao, S. S. Inelastic Dynamic Response of Rectangular Plates by Finite Elements (BN) **AM 441**
Rapp, D. *(author)* Solar Energy (BR) **SE 75**
Rasky, D. J. Application of the P-1 Approximation to Radiative Heat Transfer in a Nongray Medium (TN) **HT 182**
Ravindranath, A. Conventional Probes for the Ralative Flow Measurement in a Turbomachinery Rotor Blade Passage **P 406;** Structure and Decay Characteristics of Turbulence in the Near and Far-Wake of a Moderately Loaded Compressor Rotor-Blade (80-GT-95) **P 131**
Ravishankar, N. Finite Element Analysis of Hydraulic Cylinders (80-DE-3) **MD 239**
Raw Materials
Materials in World Perspective (BR) **MT 78**
Rawlins, A. D. Note on a Paper by Liu on the Scattering of Water Waves by a Pair of Semi-Infinite Barriers (BN) **AM 656**
Ray Integrals
Propagation of Elastic Pulses and Acoustic Emission in a Plate Part 1: Theory (81-APM-4) **AM 125;** Part 2: Epicentral Responses (81-APM-5) **AM 133;** Part 3: General Responses (81-APM-6) **AM 139**
Raychowdhury, P. N. A One Dimensional Crystal with Nearest Neighbors Coupled Through Their Velocities (TB) **DS 293**
Rayleigh Wave
Acoustoelastic Effect of Rayleigh Surface Wave in Isotropic Material **AM 119**
Razgaitis, R. Separation Efficiency of a Cyclone Separator with a Turbulence-Suppressing Rotating-Insert (80-IPC-Pwr-11) **P 566**
Reachable Sets
Estimating Reachable Sets (TB) **DS 420**
Reacting Flows
A Comparison of Cold and Reacting Flows Around a Bluff-Body Flame Stabilizer **F 328**
Reactors
LMFBR Loss of Flow Simulations in the Sodium Loop Safety Facility **P 605**
Rear Insulation
The Role of Rear Insulation in the Performance of Flat Plate Solar Collectors **SE 282**
Receiver Optical Properties
The Effect of Receiver Optical Properties on Solar Thermal Electric Systems **SE 207**
Reciprocating Expanders
A Comparison Between Trochoidal, Rotary Vane and Reciprocating Expanders (80-C2/DET-81 **MD 304**
Rectangular Cellular Enclosures
Conduction of Heat Across Rectangular Cellular Enclosures **HT 591**
Rectangular Ducts
The Numerical Prediction of Developing Turbulent Flow in Rectangular Ducts **F 445;** (D) **F 454;** (AC) **F 455**
Rectangular Enclosures
Heat Transfer in Air Enclosures of Aspect Ratio Less than One **HT 617**
Natural Convection in Undivided and Partially Divided Rectangular Enclosures **HT 623**
Rectangular Plates
Inelastic Dynamic Response of Rectangular Plates by Finite Elements (BN) **AM 441**
Numerical Solution to a Two-Dimensional Conduction Problem Using Rectangular and Cylindrical Body-Fitted Coordinate Systems **HT 753**
Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) **AM 371**
Rectified Synthesis
Implementation of Solution Rectification Techniques in an Interactive Linkage Synthesis Program (80-DET-91) **MD 657**
Red Blood Cells
Mechanics of Blood Flow **BE 102**
Reddy, J. N. Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) **AM 371**
Reddy, V. S. Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) **AM 371**
Reethof, G. On Circular Pipe Wall Vibratory Response Excited by Internal Acoustic Fields (80-WA/NC-13) **I 372**
Reference Temperatures
Reference Temperatures for Supercritical Laminar Free Convection on a Vertical Flat Plate **HT 613**
Refilling
Refilling and Rewetting of a Hot Horizontal Tube. Part III: Application of a Two-Fluid Model to Analyze Rewetting **HT 653**
Reflection
Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: *P* and *SV* Motion (81-APM-18) **AM 155**
Reflectors
Design, Evaluation, and Testing of a Moderately Concentrating, Nontracking Solar Energy Collector **SE 34**
Refraction
Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: *P* and *SV* Motion (81-APM-18) **AM 155**
Refrigerants
An Experimental Investigation of Boiling Heat Transfer of Fluorocarbon R-11 Refrigerant for Concentric-Tube Thermosyphon **HT 472**
Refrigeration
Thermodynamics of a Hermetic Reciprocating Refrigeration Compressor With MCCT-Piston and Valve System (80-C2/DET-84) **MD 310**
Regenerator Parameters
Thermal Storage Regenerator Parameters for Almost Constant Gas Discharge Temperature (TN) **HT 804**
Regenerator Systems
Use of Lead/Lag Approximations in Modeling Thermal Regenerator Systems **DS 49**
Regional Insolation
The Effects of Regional Insolation Differences upon Advanced Solar Thermal Electric Power Plant Performance and Energy Costs (79-WA/Sol-1) **SE 213**
Registered Engineer
Foreign Report **F 6**
Regular Waves
Dynamic Response of a Cantilever Pile to Vortex Shedding in Regular Waves **ERT 32**
Reheat Gas Turbines
Outline of Plan for Advanced Reheat Gas Turbine (81-GT-28) **P 772**
Reid, R. L. Editorial (Ed) **SE 181**
Reid, S. R. Piercing of Cylindrical Tubes (80-C2/PVP-150) **PVT 255**
Reissner, E. On the Influence of a Rigid Circular Inclusion on the Twisting and Shearing of a Shallow Spherical Shell (Er) **AM 215;** On a One-Dimensional Theory of Finite Torsion and Flexure of Anisotropic Elastic Plates **AM 601**
Reissner, J. E. Effects of a Circular Hole on States of Uniform Twisting and Shearing in Shallow Spherical Shells (BN) **AM 674**
Reissner Method
Application of the Reissner Method to a Timoshenko Beam (BN) **AM 672**
Rejuvenation
Surface Contamination, Rejuvenation, and the Reproducibility of Results in Nucleate Pool Boiling **HT 453**
Relative Radius
Efffects of Case Depth and Relative Radius of Curvature on Surface Durability of Case-Hardened Chromium Molybdenum Steel Roller (80-C2/DET-37) **MD 474**
Relaxation Time Coefficient
Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) **F 391;** (D) (AC) **F 395**
Reliability Levels
Design Nomographs of Compression Helical Springs for Predetermined Reliability Levels (80-C2/DET-85) **MD 268**
Relief Valves
Design of Discharge Piping for Pressure Relief Systems (80-Pet-59) **ERT 190**
Repelling Screws
An Extension of Screw Theory (80-DET-20) **MD 725**
Reservoirs
Flood Protection by Vortex Valves **DS 338**
Heat Transfer in a Capillary Flow Emerging from a Reservoir **HT 429**
Modeling Capabilities for the Devonian Gas Shales **ERT 270**
Modeling Requirements for Geopressured-Geothermal Reservoir Production **ERT 301**
Natural Convection in Horizontal Duct Connecting Two Fluid Reservoirs **HT 108**
State-of-the-Art of Models for Geothermal Recovery Processes **ERT 291**
Residual Stress
An Analytical Assessment of the Effects of Residual Stresses and Fracture Properties on Service Performance of Various Weld Repair Processes **PVT 373**
On the Applicability of Acoustoelasticity for Residual Stress Determination (81-WA/APM-8) **AM 791**
Application of Finite Element Calculations to Residual Stress Measurements **MT 157**
A Computational Model of Backlay Welding for Controlling Residual Stresses in Welded Pipes **PVT 226**
A Computational Model for Improving Weld Residual Stresses in Small Diameter Pipes by Induction Heating (80-C2/PVP-152) **PVT 294**
Residual Stress Redistribution Caused by Notches and Cracks in a Partially Autofrettaged Tube (81-PVP-6) **PVT 302**
Residual Stresses of Czochralski-Grown Crystal **AM 886**
Stress Intensity Factors due to Residual Stresses in Thin-Walled Girth-Welded Pipes (79-PVP-30) **PVT 66**
Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) **PVT 85**
Residual Vibration
Residual Vibration Criteria Applied to Multiple Degree of Freedom Cam Followers (80-DET-3) **MD 702**
Resilient Supports
Design and Performance of Compliant Thrust Bearings With Spiral-Groove Membranes on Resilient Supports (80-C2/Lub-36) **L 373;** (D) **L 385, 386;** (AC) **L 386**
Resistance Feedback Elements
A Fluidic, Hydraulic Servovalve **DS 331**
Resistance Thermometer
Semi-Transparent Gold Film as Simultaneous Surface Heater and Resistance Thermometer for Nucleate Boiling Studies **HT 65**
Resonances
A Dynamic Absorber for Gear Systems Operating in Resonance and Instability Regions (80-C2/DET-7) **MD 364**
Factors Influencing Instability and Resonances in Geared Systems (80-C2/DET-8) **MD 372**
Resonances and Instabilities in Dynamic Systems Incorporating a Cam **MD 914**
Resonant Response
The Analytical and Experimental Evaluation of Resonant Response in High-Speed, Lightweight, Highly Loaded Gearing (80-C2/DET-22) **MD 348**
Resonant Whirling
Resonant Whirling of Aircraft Propeller-Engine Systems **AM 929**
Resource Recovery
Permeability Enhancement Using Explosive Techniques (80-PET-70) **ERT 110**
Resources
Materials in World Perspective (BR) **MT 78**
Retaining Rings
Materials for Generator Retaining Rings **MT 267**
Retorts
Oil Shale Retorting in a Bottom-Burning Retort (79-HT-3) **ERT 119**
Reuther, J. F. Ten Years of Digital Computer Control of Combustion Turbines (80-GT-78) **P 54**
Revach, S. A Data Dependent Systems Approach to Dynamics of Surface Generation in Turning **I 437**
Reversing Flow
A New Probe for Measurement of Velocity and Wall Shear Stress in Unsteady, Reversing Flow **F 478**
Rewetting
Refilling and Rewetting of a Hot Horizontal Tube. Part III: Application of a Two-Fluid Model to Analyze Rewetting **HT 653**
Reynolds, D. D. Analytical Modeling of Wave Interference Directional Microphones (80-WA/NC-6) **I 361**
Reynolds, W. C. The Influence of Swirl on the Flow

Characteristics of a Reciprocating Piston-Cylinder Assembly (D) (AC) F 180, 181

Reynolds' Equation
Inverse Solution of Reynolds' Equation of Lubrication Under Point-Contact Elastohydrodynamic Conditions L 539

Reynolds Numbers
Pressure and Vortex Shedding Patterns Around a Low Aspect Ratio Cylinder in a Sheared Flow at Transitional Reynolds Numbers F 88; (D) F 95; (AC) F 96

Reynolds Stresses
The Numerical Prediction of Developing Turbulent Flow in Retangular Ducts F 445; (D) F 454; (AC) F 455

Rheological Effects
Rheological and Thermal Effects in Lubricated E.H.D. Contacts L 526

Rheology
Rheology (BR) AM 450

Rhodes, E. A Furnace Wall Ash Monitoring System for Coal Fired Boilers (80-WA/Fu-1) P 532

Richards, D. An OTEC Pilot Plant Heat Engine ERT 172

Ride Quality
Ride Quality Analysis of Multi-Level Auto Rack Equipped Flat Cars (79-WA/RT-4) I 241

Rieger, N. F. Long Arc Shrouding—A Reliability Improvement for Untuned Steam Turbine Blading (78-JPGC/Pwr-12) P 522; (D) P 527, 528, 530; (AC) P 528, 529, 530

Rienstra, S. W. On the Acoustical Implications of Vortex Shedding from an Exhaust Pipe (80-WA/NC-16) I 378

Rifkin, J. *(author)* Entropy: A New World View (BR) SE 178

Rightmire, G. K. Rubber Surface Squeeze Film (80-C2/Lub-33) L 398; (D) (AC) L 404

Rigid Bodies
Moments Between Impacting Rigid Bodies MD 812
Planar Motion of a Rigid Body With a Friction Rotor (BN) AM 205

Rigid Body Motion
On the Principle of Transference In Three-Dimensional Kinematics (80-DET-88) MD 652

Rigid Circular Inclusion
On the Influence of a Rigid Circular Inclusion on the Twisting and Shearing of a Shallow Spherical Shell (Er) AM 215

Rigid Inclusion
The Contact Problem for a Rigid Inclusion Pressed Between Two Dissimilar Elastic Half Planes AM 104

Rigid Step
Steady Motion of an Elastic Beam Across a Rigid Step (81-WA/APM-7) AM 606

Rigid Walls
Locally and Nonlocally Reacting Flexible Porous Layers: A Comparison of Acoustical Properties (80-WA/NC-14) I 302

Ring-Stiffening
Point Admittance of Cylindrical Shells With and Without Ring-Stiffening (80-WA/NC-5) I 293

Riser Pipes
Analysis of the Horizontal to Vertical Orientation of Deep Water Risers (80-Pet-67) (TB) ERT 106

Risers
Nonlinear Static Analysis of Deep Ocean Mining Pipe—Part I: Modeling and Formulation (80-Pet-48) ERT 11; Part II: Numerical Studies (80-Pet-49) ERT 16

Rissone, P. Determination of Balloon Surface in Textile Machines—A Finite Segment Approach I 424

Rizza, J. J. A Numerical Solution to Dropwise Evaporation HT 501

Road Lord Power
Evaluation of Vehicle Drag Parameters From Coast-down Experiments Conducted Under Nonideal Environmental Conditions F 133; (D) F 140; (AC) F 141

Roberts, J. M. High-Flux Solar Absorber Concept for Central Receiver Power Plants SE 52

Robertson, J. Continuous Miner Noise (80-WA/NC-4) I 282

Robillard, L. Transient Natural Convection Heat Transfer of Water With Maximum Density Effect and Supercooling (80-HT-74) HT 528

Robinson, E. Y. *(reviewer)* Glass Reinforced Plastic in Construction: Engineering Aspects by Leonard Halloway (BR) MT 78

Robinson, F. J. A Comparison Between Trocholdal, Rotary Vane and Reciprocating Expanders (80-C2/DET-81) MD 304

Robot Arms
Accessible Region and Synthesis of Robot Arms (80-DET-101) MD 803
Determination of Extreme Distances of a Robot Hand. Part 2: Robot Arms With Special Geometry (80-DET-58) MD 776

Robot Hand
Determination of Extreme Distances of a Robot Hand—Part 1 A General Theory (80-DET-57) MD 631

Robotic Mechanisms
Control of Force Distribution in Robotic Mechanisms Containing Closed Kinematic Chains DS 134

Robotics
On Functionality of a New Mechanical Hand (80-C2/DET-124) MD 277

Robotics Research
A Perspective on Robotics Research and This Issue (F) DS 106

Robots
Analysis of Mechanisms and Robot Manipulators (BR) AM 214

Rodi, W. Calculation of Annular and Twin Parallel Jets Using Various Discretization Schemes and Turbulence-Model Variations F 352

Rodkiewicz, Cz. M. On the Thrust Bearing Characteristics in Turbulent Flow L 453

Rods
Analysis and Design of a Uniform-Clearance, Pumping-Ring Rod Seal for the Stirling Engine MD 67

Rohde, S. M. Analysis of a Hydrodynamic Thrust Bearing With Incomplete Film (80-C2/Lub-27) L 355; (D) L 359, 360; (AC) L 360; The Isothermal Elastohydrodynamic Lubrication of Spheres L 547; (D) (AC) L 557; On the Steady State and Dynamic Performance Characteristics of Floating Ring Bearings (80-C2/Lub-17) L 389; (D) (AC) L 397; *(reviewer)* Tribology: Friction, Lubrication, and Wear (BR) L 320

Rohn, D. A. Constrained Fatigue Life Optimization of a Nasvytis Multiroller Traction Drive (80-C2/DET-78) MD 423; (D) MD 428; (AC) MD 429; Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) MD 410; (D) MD 417; (AC) MD 420; Simplified Fatigue Life Analysis for Traction Drive Contacts (80-C2/DET-40) MD 430; (D) MD 438; (AC) MD 439

Roll Cooling
Steady-State Temperature Distribution in a Rotating Roll Subject to Surface Heat Fluxes and Convective Cooling HT 36

Roller Bearings
An Advanced Apparatus for the Study of Roller and Cage Slip in High-Speed Roller Bearings (80-C2/Lub-2) L 46
Line Contact Deformation: A Cylinder Between Two Flat Plates (80-C2/Lub-50) L 21
On the Traction Behavior of Several Lubricants (80-C2/Lub-15) L 55

Roller Chains
Roller Chain as a Transfer Drive for the Automobile MD 19

Rollers
Contact Stress Between Rollers With Surface Irregularity (80-C2/DET-10 MD 492
Contact Stresses Between Elastic Cylinders: A Comprehensive Theoretical and Experimental Approach (80-C2/Lub-29) L 40
Effect of Asperity Interaction on Pitting in Rollers and Gears (80-C2/DET-36) MD 482
High Speed Testing of the Hollow Roller Bearing (80-C2/Lub-6) L 1
The Rotational Accuracy Characteristics of the Preloaded Hollow Roller Bearing (80-C2/Lub-23) L 6

Rolling Bearing Life
Rolling Bearing Life Modifying Factors for Film Thickness, Surface Roughness, and Friction (80-C2/Lub-16) L 509; (D) L 516-518; (AC) L 519

Rolling Contact Devices
Simplified Fatigue Life Analysis for Traction Drive Contacts (80-C2/DET-40) MD 430; (D) MD 438; (AC) MD 439

Rolling-Element Bearings
Simplified Fatigue Life Analysis for Traction Drive Contacts (80-C2/DET-40) MD 430; (D) MD 438; (AC) MD 439

Rolling Elements
A Film Thickness Analysis for Line Contacts Under Pure Rolling Conditions With a Non-Newtonian Rheological Model (80-C2/Lub-26) L 305; (D) L 313; (AC) L 314

Rolling/Sliding Contact
Investigation Into the Influence of Dynamic Forces on the Tribological Behavior of Bodies in Rolling/Sliding Contact With Particular Regard to Surface Corrugations (80-C2/Lub-52) L 26

Romie, F. E. Thermal Storage Regenerator Parameters for Almost Constant Gas Discharge Temperature (TN) HT 604

Rooney, D. M. Pressure and Vortex Shedding Patterns Around a Low Aspect Ratio Cylinder in a Sheared Flow at Transitional Reynolds Numbers F 88; (D) F 95; (AC) F 96

Rope
Efficiency of Wire Rope Terminations MT 164

Rosakis, A. J. The Effect of Crack-Tip Plasticity on the Determination of Dynamic Stress-Intensity Factors by the Optical Method of Caustics AM 302

Rosen, A. Torsion of Pretwisted Beams Due to Axial Loading (D) AM 679; (AC) AM 680

Rosner, D. E. An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) P 552; (D) P 558, 559; (AC) P 560

Ross, R. B. *(author)* Metallic Materials Specification Handbook (BR) MT 347

Ross, R. H. Design of Discharge Piping for Pressure Relief Systems (80-Pet-59) ERT 190

Rossetto, S. A Stochastic Tool-Life Model I 126

Rossie, A. N. Natural Convection in Horizontal Duct Connecting Two Fluid Reservoirs HT 108

Rossow, M. P. Application of the Tearing-Mode Crack-Growth Instability Theory to a Cracked Pressure Vessel Nozzle PVT 59

Rotary Heat Exchangers
Modeling of a Rotary Dry Cooling Tower (80-HT-95) HT 715

Rotary Machining
Some Investigations Into Machining With Driven Rotary Tools I 469

Rotary Seals
Elastohydrodynamic Lubrication of Offset O-Ring Rotary Seal (80-C2/Lub-7) L 414; (D) L 424, 425, 426; (AC) L 427

Rotary Vane Expanders
A Comparison Between Trocholdal, Rotary Vane and Reciprocating Expanders (80-C2/DET-81) MD 304

Rotating Components
The Design, Development and Operation of Gas Turbine Radio Telemetry Systems P 473
Measurement Methods in Rotating Components of Turbomachinery P 373

Rotating Disks
The Effect of Inertia on Flow Between Misaligned Rotating Disks (80-WA/FE-2) F 82
Stress Analysis of Axisymmetric Rotating Disks MD 922

Rotating Flow
Rotating Compressible Flow Over the Edge of a Finite Disk (81-APM-19) AM 249

Rotating Inserts
Separation Efficiency of a Cyclone Separator with a Turbulence-Suppressing Rotating-Insert (80-IPC-Pwr-11) P 586

Rotating Motions
The Influence of Linear and Rotating Motions on the Friction of Polymers (80-C2/Lub-44) L 503; (D) L 507; (AC) L 508

Rotating Rings
Nonlinear Harmonic Oscillations of Gyroscopic Structural Systems and the Case of a Rotating Ring (81-WA/APM-2) AM 627

Rotating Rolls
Steady-State Temperature Distribution in a Rotating Roll Subject to Surface Heat Fluxes and Con-

vective Cooling HT 36

Rotating Seal

Dynamic Response to Rotating-Seal Runout in Noncontacting Face Seals L 587

Rotating Shafts

The Balancing of Rotating Shafts by Quadratic Programming (80-DET-45) MD 831

A Direct Integration Technique for the Transient Analysis of Rotating Shafts MD 244

Rotation

Kinematic Mappings. Part 2: Rational Algebraic Motions in the Plane (80-DET-17) MD 712

Pendulum With a Rotational Vibration (BN) AM 200

Rotational Curvilinear Coordinates

Solution of Navier's Equation in Rotational Curvilinear Coordinates (BN) AM 659

Rotational Interference

Rotational Interference for Darrieus Rotors (TB) SE 173

Rotational Vibration

Rotational Vibration With Backlash—Part 2 (80-C2/DET-61) MD 387

Roth, B. *(reviewer)* Analysis of Mechanisms and Robot Manipulators (BR) AM 214; The Curvature Theory of Line Trajectories in Spatial Kinematics (80-DET-18) MD 718; An Extension of Screw Theory (80-DET-20) MD 725; Instantaneous Kinematics of Multiple-Degree-of-Freedom Motions (80-DET-53) MD 608; Kinematic Mappings. Part 1 Classification of Algebraic Motions in the Plane (80-DET-16) MD 585; Part 2: Rational Algebraic Motions in the Plane (80-DET-17) MD 712

Roth, V. Effects of Nonlinear Strain-Dependent Permeability and Rate of Compression on the Stress Behavior of Articular Cartilage BE 61; The Significance of Electromechanical and Osmotic Forces in the Nonequilibrium Swelling Behavior of Articular Cartilage in Tension BE 221

Rotor Balancing

Demonstration of a Unified Approach to the Balancing of Flexible Rotors (80-GT-87) P 101

Rotor Blades

Conventional Probes for the Relative Flow Measurement in a Turbomachinery Rotor Blade Passage P 406

Structure and Decay Characteristics of Turbulence in the Near and Far-Wake of a Moderately Loaded Compressor Rotor-Blade (80-GT-95) P 131

Rotor-Stator Axial Spacing

Wake Induced Time-Variant Aerodynamics Including Rotor-Stator Axial Spacing Effects F 59

Rotor Steel

Threshold and Low-Rate Fatigue Crack Growth of a NiMoV Rotor Steel MT 104

Rotordynamics

Rotordynamic Instability in Centrifugal Compressors—Are All the Excitations Understood? (80-GT-149) P 288

Rotors

Active Vibration Control of a Flexible Rotor on Flexibly-Mounted Journal Bearings (81-WA/DSC-5) DS 383

Comparison of Experimental and Computational Shock Structure in a Transonic Compressor Rotor (80-GT-81) P 78

A Direct Integration Technique for the Transient Analysis of Rotating Shafts MD 244

Dynamic Characteristics of a High-Speed Rotor With Radial and Axial Foil-Bearing Supports (80-C2/Lub-35) L 361; (D) L 370, 371; (AC) L 371

Experiments on the Vibration Characteristics of a Rotor With Flexible, Damped Support (80-GT-124) P 174

Influence of Acceleration on the Critical Speed of a Jeffcott Rotor (80-GT-88) P 108

Instability of a Damped Rotor Partially Filled With an Inviscid Liquid (BN) AM 674

Mean Flow Measurements Near the Plane of an Open Rotor Operating with an Inlet Velocity Gradient P 445

Measurements of the Mean Flow Velocity and Velocity Fluctuations at the Exit of an FC Centrifugal Fan Rotor P 393

Techniques for Aerodynamic and Turbulence Measurements in Turbomachinery Rotors P 374

Rough Ground

Nonstationary Response of Vehicles on Rough Ground—A State Space Approach DS 245

Rough Surfaces

The Wear of Polymers Sliding on Polymeric Films Deposited on Rough Surfaces (80-C2/Lub-24) L 286

Roughness

Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (D) (AC) F 372

Rousselet, J. Dynamic Behavior of Continuous Cantilevered Pipes Conveying Fluid Near Critical Velocities (81-WA/APM-13) AM 943

Rovetta, A. On Functionality of a New Mechanical Hand (80-C2/DET-124) MD 277

Rowe, W. B. Fluid-Film Journal Bearings Operating in a Hybrid Mode: Part I: Theoretical Analysis and Design L 558; Part II—Experimental Investigation L 566

Rowe-Spick Relationship

On the Rowe-Spick Shear Angle Relations for Orthogonal Machining I 79

Roylance, D. K. Oscillatory Compressional Behavior of Articular Cartilage and Its Associated Electromechanical Properties BE 280

Rubber Seals

Elastohydrodynamic Lubrication of Offset O-Ring Rotary Seal (80-C2/Lub-7) L 414; (D) L 424, 425, 426; (AC) L 427

Rubber Surfaces

Rubber Surface Squeeze Film (80-C2/Lub-33) L 398; (D) (AC) L 404

Rubbing

The Hammer QSD-Quick Stop Device for High Speed Machining and Rubbing (80-WA/PROD-13) I 13

Rubbing Surfaces

The Behavior of Adhered Fragments Interposed Between Sliding Surfaces and the Formation Process of Wear Particles L 195

Rubenstein, C. A Critical Appraisal of Static Hardness Measurements AM 796; The Grinding of Workpiece Materials Exhibiting High Adhesion—Part 2: Forces I 150; The Grinding of Workpieces Exhibiting High Adhesion—Part 1: Mechanisms I 144;

Rubin, C. Application of Orthotropic Plate Theory to Windmill Blade Design MD 892

Rubin, D. Uncoupling Approximation in Fluid-Structure Interaction Problems With Cavitation AM 753

Rudinger, G. *(author)* Fundamentals of Gas-Particle Flow (BR) F 644

Ruiz, C. On the Buckling Design of Spherical Shells (81-PVP-32) PVT 261

Runner Passage

The Third Two-Dimensional Problem of Three-Dimensional Blade Systems of Hydraulic Machines—Part 1: Theoretical Analysis F 33; Part 2: Anaytical Results F 42

Running Cracks

On the Motion of an Axial Through Crack in a Pipe PVT 281

Running-In

Failure of Thin Film Lubrication—The Effect of Running-In on the Load Carrying Capacity of Thin-Film Lubricated Concentrated Contacts (80-C2/Lub-42) L 203; (D) (AC) L 209

Runout

Dynamic Response to Rotating-Seal Runout Noncontacting Face Seals L 587

Runstadler, P., Jr. Measurement Methods in Rotating Components of Turbomachinery P 373

Runway Friction

Longitudinal Instability in Braked Landing Gear DS 259

Rupinskas, V. Pulse-Decay Method for Measuring the Thermal Conductivity of Living Tissues BE 253

Rupture

Acoustic Emission Monitoring During Rupture Test of Pressure Vessel and Laboratory Fracture Test PVT 191

Rybicki, E. F. A Computational Model of Backlay Welding for Controlling Residual Stresses in Welded Pipes PVT 226; A Computational Model for improving Weld Residual Stresses in Small Diameter Pipes by Induction Heating (80-C2/PVP-152) PVT 294; Stress Intensity Factors due to Residual Stresses in Thin-Walled Girth-Welded Pipes (79-PVP-30) PVT 66

Ryder, R. H. Creep Rupture Bending Test of 20 Percent Cold-Prestrained Ni-Fe-Cr Alloy Straight Tubes at 1100 F (593 C) (80-C2/PVP-18) PVT 337

S

Sabbah, H. N. Flow Visualization in a Mold of an Atherosclerotic Human Abdominal Aorta BE 168

Sachdeva, T. D. A Finite Element Method for the Elastic Contact Problems I 456

Sadhal, S. S. Unsteady Heat Flow Between Solids with Partially Contacting Interface HT 32

Sadler, J. P. A New Solution to Coulomb Friction in Mechanism Bearings: Theory and Application (80-DET-52) MD 764

Safety Valves

The Effect of Bevel Angle on Safety Valve Vent-Pipe Systems P 567

Sakai, T. Effect of Molecular Weight Distribution of Mineral Oil on Tribofailure of Spur Gears MD 210

Sakai, Y. Stochastic and Fuzzy Decision Problems in Three-Workpiece Lapping Process I 192

Sakata, M. Crack-Tip Stress and Strain Singularity in Thermally Loaded Elastic-Plastic Material (BN) AM 428; Energy-Release Rate in Elastic-Plastic Fracture Problems (81-WA/APM-21) AM 825

Sakurai, T. Role of Chemistry in the Lubrication of Concentrated Contacts L 473

Salamon, N. J. Effects of Subject Position on Balance Platform Measurements (TB) BE 213

Salane, H. J. Dynamic Response of a Cantilever Pile to Vortex Shedding in Regular Waves ERT 32

Salt

Construction and Startup Performance of the Miamisburg Salt-Gradient Solar Pond SE 11

Evaporation of Small Water Drops Containing Salt in a High Pressure Steam Environment (76-WA/FE-35) F 112

Salt Concentration

Mixed Layer Development in a Double-Diffusive, Thermohaline System SE 351

Salzbrenner, R. Drill Stem Steels for Use in Geothermal Environments ERT 159

Samie, F. Heat Transfer from a Plate Elevated above a Host Surface and Washed by a Separated Flow Induced by the Elevation Step HT 441; Measured Heat Transfer Coefficients at and Adjacent to the Tip of a Wall-Attached Cylinder in Crossflow—Application to Fins HT 778

Samuelsen, G. S. An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) P 759; Prediction and Measurement of Mass, Heat, and Momentum Transport in a Nonreacting Turbulent Flow of a Jet in an Opposing Stream F 127

Sandler, I. S. Uncoupling Approximations in Fluid-Structure Interaction Problems With Cavitation AM 753; On the Uniqueness and Stability of Endochronic Theory (D) AM 985; (AC) AM 986

Sano, T. Unsteady Stagnation Point Heat Transfer With Blowing or Suction HT 448

Sarhan, A. Developing Laminar Free Convection in an Open Ended Vertical Annulus With a Rotating Inner Cylinder HT 552

Sarofim, A. F. The Interrelationship between Soot and Fuel NO_x Control in Gas Turbine Combustors (80-GT-76) P 43

Sasada, T. The Behavior of Adhered Fragments Interposed Between Sliding Surfaces and the Formation Process of Wear Particles L 195

Sasaki, H. Strength of the Surface Layer of Mild Steel MT 282

Sasscer, D. S. In Situ Biofouling of Ocean Thermal Energy Conversion (OTEC) Evaporator Tubes SE 121

Satcunanathan, S. The Role of Rear Insulation in the Performance of Flat Plate Solar Collectors SE 282

Sato, H. Behavior of Self-Excited Chatter Due to Multiple Regenerative Effect I 324

Sato, Y. Strength of the Surface Layer of Mild Steel **MT 282**
Satoh, M. Fatigue Crack Growth Behavior of Explosively-Bonded Clad Steel Plates **MT 36**
Saturation Hardening
On the Characterization of Strain-Hardening in Plasticity (81-APM-26) **AM 285**
Saturation Pressure
Correlation of Pressure Undershoot During Hot-Water Depressurization **HT 52**
Saudi Arabia
Conserving Energy in Saudi Arabia **P 519**
Saunders, H. *(reviewer)* Analysis of Linear Dynamic Systems (BR) **MD 282**; Elementary Finite Element Method (BR) **MD 685**; Fatigue of Welded Structures (BR) **MT 185**; An International Survey of Shock and Vibration Technology (BR) **MD 685**; Metal Fatigue in Engineering (1980) (BR) **MT 346**; A Modern Course in Aeroelasticity (BR) **MD 261**; Proceedings of Noise-CON 79, Machinery Control Noise (BR) **MD 261**; Structural Mechanics Softwear Series—Vol. II (BR) **MD 558**
Savage, G. M. Biogasification of Municipal Solid Wastes **ERT 180**
Savart-Masson Effect
On the Savart-Masson Effect (BN) **AM 426**
Sawyer, W. K. Modeling Capabilities for the Devonian Gas Shales **ERT 270**
Sayar, B. A. Pendulum Analogy for Nonlinear Fluid Oscillations in Spherical Conbtainers **AM 769**
Sayed-Efahani, R. A Comparison of Multifrequency Techniques for Measuring the Dynamics of Squeeze-Film Bearings (80-C2/Lub-46) **L 137**
Sazawal, V. K. Trial Application of the Draft Structural Design Criteria for Breeder Reactor Core Components to a Typical Blanket Assembly Duct **PVT 380**
Scale Deposition
The Effect of Magnus Force on the Scale Deposition in Geothermal Systems (TB) **ERT 352**
Scale Effects
Scale Effects on Various Types of Limited Cavitation **F 405**; (D) (AC) **F 414**
Scanlan, R. H. *(author)* A Modern Course in Aeroelasticity (BR) **MD 261**
Scatter
The Wear Coefficient—Magnitude, Scatter, Uses (80-C2/Lub-4) **L 188**; (D) **L 193**; (AC) **L 194**
Scattering
Anisotropic Two-Dimensional Scattering: Comparison of Experiment with Theory **HT 127**
Schade, G. R. Probabilistic Models in Computer Automated Slider-Crank Function Generator Design (80-DET-46) **MD 835**
Schaffer, B. G. Nonlinear Viscoelastic Analysis of a Unidirectional Composite Material (81-WA/APM-15) **AM 859**
Schaffer, D. J. Reflections on the Past Twenty Years in Fluidics (F) **DS 299**
Schajer, G. S. Application of Finite Element Calculations to Residual Stress Measurements **MT 157**; Circular Saw Vibration Control by Induction of Thermal Membrane Stresses (80-WA/PROD-8) **I 81**
Scharle, W. J. Oxygen Facilities for Synthetic Fuel Projects **I 409**
Schatz, J. F. On Plastic Strain in Porous Materials (BN) **AM 976**
Schetz, J. A. Injection and Mixing in Turbulent Flow (BR) **AM 988**
Scheurkogel, A. J. On the Error That Can Be Induced by an Ergodicity Assumption (BN) **AM 654**
Schilke, P. W. Water-Cooled Gas Turbine Monometallic Nozzle Development (80-GT-97) **P 141**
Schilling, W. F. Low-Pressure Plasma-Spray Coatings for Hot-Corrosion Resistance (80-GT-98) **P 147**; Water-Cooled Gas Turbine Monometallic Nozzle Development (80-GT-97) **P 141**
Schimmel, W. P., Jr. The Interrelation between Recurrent and Capital Costs in a Solar Thermal Process Heat System **SE 241**
Schindwolf, R. Frequency Response Analysis of Fluid Control Systems for Parabolic Trough Solar Collectors **SE 339**
Schinkel, W. M. M. Flow Structure with Natural Convection in Inclined Air-Filled Enclosures **HT 535**
Schlinker, R. H. Development of a Large-Scale Wind Tunnel for the Simulation of Turbomachinery Airfoil Boundary Layers (81-GT-6) **P 678**
Schmidt, B. A. Pendulum With a Rotational Vibration (BN) **AM 200**
Schmidt, F. W. *(author)* Thermal Energy Storage and Regeneration (BR) **SE 178**
Schmidt, H. Vibration of an Elastic Circular Plate on an Elastic Half Space—A Direct Approach **AM 161**
Schmidt, R. Buckling of a Clamped-Hinged Circular Arch Under Gas Pressure and Related Problems (BN) **AM 425**
Schmidt, S. C. Permeability Enhancement Using Explosive Techniques (80-PET-70) **ERT 110**
Schmidt, Z.
Experimental Study of Two-Phase Normal Slug Flow in a Pipeline-Riser Pipe System (80-Pet-35) **ERT 67**
Schmitendorf, W. E. A Note on Avoidance Control **DS 69**
Schneider, M. H. Thermal Expansion Accommodation in a Jet Engine Frame **P 776**
Schneider, R. W. Background of New Code Rules for Integral Flat Heads with a Large, Central Nozzle **PVT 116**
Schofield, W. H. Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (80-WA/FE-9) **F 97**; Turbulent Shear Flows Over a Step Change in Surface Roughness **F 344**
Schoppee, M. M. Some Problems in Winding Geometry **I 418**
Schreier, B. A. A Three-Dimensional Geometrically Nonlinear Analysis of Pipelaying in an Ocean Environment (TB) **PVT 201**
Schroeder, J. W. Near-Contact Explosive Forming **PVT 366**
Schuller, F. T. Calculated and Experimental Data for a 118-mm Bore Roller Bearing to a 3 Million DN (80-C2/Lub-14) **L 274**; (D) **L 281**; (AC) **L 283**
Scientific Interest
The History of Tribology in America **L 323**
Scott, B. R. A Note on the Solution for Continuous Jet Penetration of Solids (TB) **I 349**
Scott, M. J. Analytic Prediction of the Friction Factor for Turbulent Flow in Internally Finned Channels **HT 423**
Screw Theory
An Extension of Screw Theory (80-DET-20) **MD 725**
Sea Ice
A Simple Model of Seasonal Sea Ice Growth (Er) **ERT 290**
Sea Ice Growth
A Simple Model of Seasonal Sea Ice Growth (80-WA/HT-20) **ERT 212**
Sea Ice Road
Experimental Study on Moving Loads on a Floating Sea Ice Road **ERT 96**
Sea Salt
The Control of Hot Corrosion in Marine Gas Turbines (80-GT-126) **P 188**
Sea Waves
Linear Prediction Theory for Digital Simulation of Sea Waves (81-Pet-7) **ERT 243**
Seabaugh, P. W. Field Results From a Linked Vertical Well UCG Test in Deep, Thin-Seam Bituminous Coal **ERT 277**
Seal Rings
An Analysis of Mechanical Face Seal Vibrations (80-C2/Lub-8) **L 428**; (D) (AC) **L 434**
Sealing
Analysis and Design of a Uniform-Clearance, Pumping-Ring Rod Seal for the Stirling Engine **MD 67**
Seals
Centrifugal Effects in Thrust Bearings and Seals Under Laminar Conditions (80-C2/Lub-21) **L 126**
Thermoelastic and Dynamic Phenomena in Seals (80-C2/Lub-9) **L 253**
Seasholtz, R. G. Efficient Laser Anemometer for Intra-Rotor Flow Mapping in Turbomachinery **P 424**
Secomb, T. W. Mechanics of Blood Flow **BE 102**
Second Decade
A Ten-Year Retrospective On This Journal (F) **DS 1**
Second Language
International Technology Transfer—Who Should Learn the Second Language? (80-C2/DET-83) **MD 335**
Secondary Flow
Influence of Mach Number and End Wall Cooling on Secondary Flows in a Straight Nozzle Cascade (80-GT-52) **P 257**; (D) **P 263**; (AC) **P 264**
The Numerical Prediction of Developing Turbulent Flow in Rectangular Ducts **F 445**; (D) **F 454**; (AC) **F 455**
Secondary Vorticity
The Effect of Secondary Vorticity on the Inception of Vortex Cavitation **F 19**
Sedimentation
An Application of Mixture Theory to Particulate Sedimentation (D) (AC) **AM 210**
Seed, W. A. Location of Early Atheroma in the Human Coronary Arteries **BE 208**
Seetharam Bhat, M. A Procedure to Generate Liapunov Functional for Distributed Parameter Systems (BN) **AM 188**
Seidel, B. R. EBR-II Metallic Driver Fuel—A Live Option (80-C2/NE-23) **P 612**
Seireg, A. A Dynamic Absorber for Gear Systems Operating in Resonance and Instability Regions (80-C2/DET-7) **MD 364**; An Experimental Investigation of the Effect of Lubricant Properties on Temperature and Wear in Sliding Concentrated Contacts (80-C2/Lub-1) **L 261**; Factors Influencing Instability and Resonances in Geared Systems (80-C2/DET-8) **MD 372**; A Numerical Solution to the Dynamic Load, Film Thickness, And Surface Temperatures in Spur Gears, Part I Analysis **MD 177**; Part II Results **MD 188**; (D) **MD 194**; (AC) **MD 194**
Seismic Problems
Three-Directional Fluid Pool Seismic Sloshing Analysis (80-C2/PVP-49) **PVT 10**
Seismic Response
Computation of Seismic Response from Higher Frequency Modes (80-C2/PVP-50) **PVT 16**
Earthquake Response of Deformable Liquid Storage Tanks (80-C2/PVP-79) **AM 411**
Seki, N. An Experimental Investigation of Boiling Heat Transfer of Fluorocarbon R-11 Refrigerant for Concentric Tube Thermosyphon **HT 472**
Self-Consistency
Self-Consistent Determination of Time-Dependent Behavior of Metals (81-APM-11) **AM 41**
Self-Consistent Relations
A Self-Consistent Scheme for the Relaxation Behavior of Metals (81-WA/APM-14) **AM 779**
Self-Excited Chatter
Behavior of Self-Excited Chatter Due to Multiple Regenerative Effect **I 324**
Self-Forging Fragment
Dynamic Analysis of Explosive-Metal Interaction in Three Dimensions **AM 30**
Self-Pressurization
Design of Efficient Turbulent Thrust Bearings III. Self-Pressurized Design **L 459**
Self-Similarity
Similarity, Self-Similarity and Intermediate Asymptotics (BR) **AM 213**
Self-Tuning Regulators
Model Reference Adaptive Controllers and Stochastic Self-Tuning Regulators—A Unified Approach **DS 404**
Semi-Infinite Barriers
Note on a Paper by Liu on the Scattering of Water Waves by a Pair of Semi-Infinite Barriers (BN) **AM 656**
Semi-Infinite Materials
The Exact Solutions of Some Stefan Problems With Prescribed Heat Flux **AM 732**
Semi-Infinite Medium
Anisotropic Two-Dimensional Scattering: Comparison of Experiment with Theory **HT 127**
Semi-Infinite Solid
On the Physical Basis of Auerbach's Law (TB) **MT 183**
Semi-Loof Shell Element
Application of the Semi-Loof Thin Shell Element to the Analysis of Aircraft Engine Structures **P 511**
Senator, M. Why Sliding Seats and Short Stroke Intervals are Used for Racing Shells **BE 151**

Senoo, Y. Optimum Strut-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) **F 294**; On the Pressure Losses Due to the Tip Clearance of Centrifugal Blowers (80-GT-139) **P 271**

Sensors

Development of an Electrofluidic Rate Sensor **DS 303**

Fabrication, Testing, and Evaluation of Prototype Fluidic Capillary Pyrometer Systems **DS 308**

A Perspective on Robotics Research and This Issue (F) **DS 106**

Senuma, T. Investigation Into the Influence of Dynamic Forces on the Tribological Behavior of Bodies in Rolling/Sliding Contact With Particular Regard to Surface Corrugations (80-C2/Lub-52) **L 26**

Separation

REVIEW—A Review of Some Phenomena in Turbulent Flow Separation **F 520**

Separation Efficiency

Separation Efficiency of a Cyclone Separator with a Turbulence-Suppressing Rotating-Insert (80-IPC-Pwr-11) **P 566**

Sepehrnoori, K. Modeling Requirements for Geopressured-Geothermal Reservoir Production **ERT 301**

Sergev, S. S. The Natural Frequencies and Mode Shapes of Cables With Attached Masses (81-Pet-10) **ERT 237**

Sernas, V. Heat Transfer in Air Enclosures of Aspect Ratio Less than One **HT 617**

Servomechanism Drives

Minimum Energy-Loss Control of Electro-and Hydro-Mechanical Modulated Convertor Drives (80-C2/DET-42) **MD 48**

Servosystems

Analysis, Synthesis and Design of Hydraulic Servosystems and Pipelines (BR) **DS 73**

Severe Environments

Thermal Stresses in Severe Environments (BR) **AM 453**

Severud, L. K. Experience With Simplified Inelastic Analysis of Piping Designed for Elevated Temperature Services (80-C2/NE-15) **PVT 267**

Sewage Sludge

Duluth Co-Disposal Facility **ERT 282**

Shafts

Parametric Instability of a Rotating Shaft Due to Pulsating Torque **AM 948**

Shah, V. N. Nonlinear Dynamic Analysis of a Structure Subjected to Multiple Support Motions (80-C2/PVP-32) **PVT 27**

Shaked, U. Stable Linear Systems Simplification Via Padé Approximations to Hurwitz Polynomials **DS 279**

Shaking Forces

A New Concept for Force Balancing Machines for Planar Linkages. Part 1: Theory (80-DET-73) **MD 537**

Shamsundar, N. Log-Mean Temperature-Difference Correction Factors for Passive Latent-Heat Storage Units **SE 281**; Similarity Rule for Solidification Heat Transfer with Change in Volume (TN) **HT 173**

Shape Functions

An Isoparametric Finite Element With Nodal Derivatives (81-APM-1) **AM 64**

Sharma, V. D. On the Propagation of Weak Discontinuities Along Bicharacteristics in a Radiating Gas **AM 737**

Sharp Blades

Mechanics of Ice-Lifting From a Flat Surface Through Penetration With a Sharp Blade (81-WA/APM-27) **AM 936**

Sharp-Crested Weirs

The Study of Sluice Gate and Sharp-Crested Weir Through Hodograph Transformations (81-APM-23) **AM 229**

Shashaty, A. J. The Reduction of Capstan Effectiveness by Cable Bending Resistance (80-WA/OCE-2) **I 319**

Shaw, M. C. Adaptive Control Optimization of Grinding (D) **I 352**; (AC) **I 353**; The Role of Wheel-Work Deflection in Grinding Operations (80-WA/PROD-11) **I 73**

Shear Deformation

Acceleration of Unbalanced Rotor Through the Resonance of Supporting Structure (81-APM-24) **AM 419**

Shear Flow

Pressure and Vortex Shedding Patterns Around a Low Aspect Ratio Cylinder in a Sheared Flow at Transitional Reynolds Numbers **F 88**; (D) **F 95**; (AC) **F 96**

Shear Stress

A Film Thickness Analysis for Line Contacts Under Pure Rolling Conditions With a Non-Newtonian Rheological Model (80-C2/Lub-26) **L 305**; (D) **L 313**; (AC) **L 314**

Sheared Flow

Pressure and Vortex Shedding Patterns Around a Low Aspect Ratio Cylinder in a Sheared Flow at Transcritical Reynolds Numbers (D) **F 373**; (AC) **F 374**

Shearing

On the Influence of a Rigid Circular Inclusion on the Twisting and Shearing of a Shallow Spherical Shell (Er) **AM 215**

Shelter, M. H. Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) **MD 410**; (D) **MD 417**; (AC) **MD 420**

Shekleton, J. R. The Civic: A Concept in Vortex Induced Combustion for the Solar Gemini 10kW Gas Turbine (80-GT-54) **P 34**; The CIVIC—A Concept in Vortex Induced Combustion, Part II (81-GT-12) **P 708**

Shell Structures

Point Admittance of Cylindrical Shells With and Without Ring-Stiffening (80-WA/NC-5) **I 293**

Shells

A Comparison of Thermal Performance of Two and Four Tube Pass Designs for Split Flow Shells **HT 169**

On the Nonlinear Intrinsic Dynamics of Doubly Curved Shells (81-WA/APM-9) **AM 909**

Sheng, C.-F. Crack Path Prediction for a Kinked Crack in the Neighborhood of a Circular Inclusion in an infinite Medium (81-APM-31) **AM 313**

Shenker, J. D. Water Tempered Cleaning Mediums for Sootblowers **P 561**

Shepherd, I. C. A Four Hole Pressure Probe for Fluid Flow Measurements in Three Dimensions **F 590**

Shewen, E. C. Optimization of Flow Passage Geometry for Air-Heating, Plate-Type Solar Collectors **SE 323**

Shih, T. T. Threshold and Low-Rate Fatigue Crack Growth of a NiMoV Rotor Steel **MT 104**

Shima, A. A Photographic Study of Cavitation in Jet Flow (D) (AC) **F 371**

Shimogo, T. Vibrations of Square and Hexagonal Cylinders in a Liquid **PVT 233**

Shin, Y. W. A Hybrid Numerical Method for Homogeneous Equilibrium Two-Phase Flows in One Space Dimension (80-C2/PVP-51) **PVT 20**

Shinohara, Y. Vibrations of Square and Hexagonal Cylinders in a Liquid **PVT 233**

Shiraishi, M In-Process Measurement of Surface Roughness in Turning by Laser Beams (80-WA/Prod-17) **I 203**

Shmeter, S. M. *(author)* Turbulence in the Free Atmosphere (BR) **AM 968**

Shock

Comparison of Experimental and Computational Shock Structure in a Transonic Compressor Rotor (80-GT-81) **P 78**

An International Survey of Shock and Vibration Technology (BR) **MD 685**

Some Considerations on Thermal Shock Problems in a Plate **AM 113**

Shock Loading

Dynamic Crack Propagation in Precracked Cylindrical Vessels Subjected to Shock Loading **PVT 155**

Shoji, H. Forces on Staggered Airfoil Cascades in Unsteady In-Phase Motion **F 299**

Shoji, T. Evaluation of Radiation Damage in Reactor Pressure Vessel Steel by Elastic-Plastic Fracture Mechanics **MT 276**; A New Parameter for Characterizing Corrosion Fatigue Crack Growth **MT 298**

Short-Fiber Reinforced Composite

On Stiffness and Strength of an Aligned Short-Fiber Reinforced Composite Containing Fiber-End Cracks Under Uniaxial Applied Stress **AM 361**

Short Journal Bearings

Cavitation in a Short Bearing With Pressurized Lubricant Supply (80-C2/Lub-47) **L 337**; (D) **L 346**; (AC) **L 347**

Short Strokes

Why Sliding Seats and Short Stroke Intervals are Used for Racing Shells **BE 151**

Showalter, J. G. *(author)* An International Survey of Shock and Vibration Technology (BR) **MD 685**

Shrivastava, S. K. A Procedure to Generate Liapunov Functional for Distributed Parameter Systems (BN) **AM 188**; Stability Theorems for Multidimensional Linear Systems With Variable Parameters **AM 174**

Shrouds

Long Arc Shrouding—A Reliability Improvement for Untuned Steam Turbine Blading (78-JPGC/Pwr-12) **P 522**; (D) **P 527, 528, 530**; (AC) **P 528, 529, 530**

Shuaib, A. R. N. Dynamic Analysis of Milling Machine by Torque Signals **I 235**

Shur, G. N. *(author)* Turbulence in the Free Atmosphere (BR) **AM 988**

Sibley, L. B. Some Limitations in Applying Classical EHD Film Thickness Formulas to a High-Speed Bearing (80-C2/Lub-13) **L 295**; (D) **L 301**, (AC) **L 303**

Siddall, J. N. Integration of Optimization With the Design Process (CR) **MD 679**; The Optimization Problem With Optimal Tolerance Assignment and Full Acceptance (80-DET-47) **MD 842**

Sidewall Losses

Natural Convection and Sidewall Losses in Trapezoidal Groove Collectors **SE 167**

Sidik, S. M. Effect of Sodium, Potassium, Magnesium, Calcium, and Chlorine on the High Temperature Corrosion of In-100, U-700, IN-792, and MAR M-509 (80-GT-150) **P 294**

Siegel, R. Heat Transfer in Cooled Porous Region with Curved Boundary **HT 765**

Siesmic Source

Fracture Mechanics (BR) **MT 77**

Sieverding, C. H. Influence of Mach Number and End Wall Cooling on Secondary Flows in a Straight Nozzle Cascade (80-GT-52) **P 257**; (D) **P 263**; (AC) **P 264**

Signal Systems

Analysis of Linear Dynamic Systems (BR) **MD 262**

Signer, H. R. Performance of Computer-Optimized Tapered-Roller Bearings to 2.4 Million DN (80-C2/Lub-18) **L 13**

Silicon Carbide

The Adhesion, Friction, and Wear of Binary Alloys in Contact With Single-Crystal Silicon Carbide (80-C2/Lub-53) **L 180**

Similarity

Similarity, Self-Similarity and Intermediate Asymptotics (BR) **AM 213**

Similarity Rule

Similarity Rule for Solidification Heat Transfer with Change in Volume (TN) **HT 173**

Simmonds, J. G. Exact Equations for the Large Inextensional Motion of Elastic Plates **AM 109**; Thickness Effects Are Minor in the Energy-Release Rate Integral for Bent Plates Containing Elliptic Holes or Cracks **AM 320**

Simmons, H. C. Some Effects of Using Water as a Test Fluid on Fuel Nozzle Spray Analysis (80-GT-90) **P 118**

Simon, V. Elastohydrodynamic Lubrication of Hypoid Gears (80-C2/DET-47) **MD 195**; A Method of Local Synthesis of Gears Grounded on the Connections Betwen the Principal and Geodetic Curvatures of Surfaces (80-C2/DET-30) **MD 114**; (D) **MD 125**

Simple Cycle Gas Turbines

An Evaluation of Steam Injected Combustion Turbine Systems (80-GT-51) **P 13**

Simpson, R. L. REVIEW—A Review of Some Phenomena in Turbulent Flow Separation **F 520**

Sims, D. L. Gas Turbine Engine Disk Retirement-for-Cause: An Application of Fracture Mechanics and NDE (80-GT-127) **P 198**

Sinclair, J. H. Superhybrid Composite Blade Impact Studies (81-GT-24) **P 731**

Sines, G. Fatigue Criteria Under Combined Stresses

or Strains **MT 82**

Singh, K. P. A Comparison of Thermal Performance of Two and Four Tube Pass Designs for Split Flow Shells **HT 169**; Some Fundamental Relationships for Tubular Heat Exchanger Thermal Performance **HT 573**

Singh, R. S. On the Propagation of Weak Discontinuities Along Bicharacteristics in a Radiating Gas **AM 737**

Singh, Y. P. Mathematical Formulation of Cooling Water Flow Rates for High Speed Continuous Slab Caster (80-C2/DET-111) **MD 318**

Single-Toothed Helical Cutters

Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part I: Plain Milling With a Single-Toothed Helical Cutter (80-WA/Prod-4) **I 165**; Part II: Plain Milling With a Multi-Toothed Helical Cutter (80-WA/Prod-5) **I 174**

Singular Perturbation Techniques

A Finite-Element Singular-Perturbation Technique for Convection-Diffusion Problems—Part 1: The One-Dimensional Case **AM 265**; Part 2: Two-Dimensional Problems **AM 272**

Sinusoidal Glass Honeycomb

Design Optimization of Sinusoidal Glass Honeycomb for Flat Plate Solar Collectors **SE 268**

Sisto, F. *(author)* A Modern Course in Aeroelasticity (BR) **MD 261**

Sitaram, N. Conventional Probes for the Relative Flow Measurement in a Turbomachinery Rotor Blade Passage **P 406**

Skalak, R. *(reviewer)* Biomechanics: Mechanical Properties of Living Tissues (BR) **BE 231**; Mechanics of Blood Flow **BE 102**

Skewed Rotating O-Rings

Elastohydrodynamic Lubrication of Offset O-Ring Rotary Seal (80-C2/Lub-7) **L 414**; (D) **L 424, 425, 426**; (AC) **L 427**

Ski Binding

Design of an Actively Controlled Snow Ski Release Binding **BE 138**

Skidding

Minimum Load Requirements for the Prevention of Skidding in High Speed Thrust Loaded Ball Bearings (80-C2/Lub-3) **L 35**

Skin Friction

Heat and Momentum Transfer in a Plane Turbulent Wall Jet **HT 138**

Viscous Flow Drag Reduction (BR) **F 485**

Skinner, J. the Wear of a Chromium Carbide Hard Facing: The Effect of High Gas Pressure on Wear Transitions (80-C2/Lub-5) **L 228**

Skreiner, M. A New Solution to Coulomb Friction in Mechanism Bearings: Theory and Application (80-DET-52) **MD 764**

Slab Casters

Mathematical Formulation of Cooling Water Flow Rates for High Speed Continuous Slab Caster (80-C2/DET-111) **MD 318**

Slagis, G. C. TRANS2A: An Unconditionally Stable Code for Thermal Transient Stress Analysis in Piping **PVT 50**

Sleeve Bearings

Contact Temperature in Dry Bearings. Three Dimensional Theory and Verification (80-C2/Lub-40) **L 243**; (D) (AC) **L 252**

Sliding

An Analysis of Contact Between a Pair of Surface Asperities During Sliding **AM 493**

The Wear of Polymers Sliding on Polymeric Films Deposited on Rough Surfaces (80-C2/Lub-24) **L 266**

Sliding Bearings

Lagare Cu Alunecare (Sliding Bearings) (BR) **L 319**

Sliding Conditions

An Experimental Investigation of the Effect of Lubricant Properties on Temperature and Wear in Sliding Concentrated Contacts (80-C2/Lub-1) **L 261**

Sliding Friction

The Efficiency of Involute Spur Gears **MD 160**

Sliding Seats

Why Sliding Seats and Short Stroke Intervals are Used for Racing Shells **BE 151**

Sliding Surfaces

The Behavior of Adhered Fragments Interposed Between Sliding Surfaces and the Formation Process of Wear Particles **L 195**

Sliding Systems

Surface Temperatures in Sliding Systems—A Finite Element Analysis (80-C2/Lub-28) **L 90**

Sliding Wear

A Review of the Recent Literature on the Unlubricated Sliding Wear of Dissimilar Metals (81-WA/Mat-2) **MT 333**

Slip

An Advanced Apparatus for the Study of Roller and Cage Slip in High-Speed Roller Bearings (80-C2/Lub-2) **L 46**

Slip Band

A Dislocation Model for Fatigue Crack Initiation (81-APM-3) **AM 97**

Slip Response

A Finite Element Model for Elastic and Slip Response of Fusion Magnets (D) **PVT 127**

Slotted Diffusers

Flow Field Analysis and Performance of Wind Turbines Employing Slotted Diffusers **SE 17**

Slug Flow

Effects of Axial Conduction and Convective Boundary Conditions in Slug Flow inside a Circular Tube **HT 436**

Experimental Study of Two-Phase Normal Slug Flow in a Pipeline-Riser Pipe System (80-Pet-35) **ERT 67**

Sluice Gates

The Study of Sluice Gate and Sharp-Crested Weir Through Hodograph Transformations (81-APM-23) **AM 229**

Slurry Pipelines

Long-Distance, High-Volume Transport of Coal by Slurry Pipeline (80-WRK/Pet-1) **ERT 322**

Small Cracks

Small Crack Behavior and the Prediction of Fatigue Life **MT 26**

Smalley, A. J. Demonstration of a Unified Approach to the Balancing of Flexible Rotors (80-GT-87) **P 101**

Smart, A. E. Optical Advances in Laser Transit Anemometry **P 438**

Smith, B. V. An Advanced Apparatus for the Study of Roller and Cage Slip in High-Speed Roller Bearings (80-C2/Lub-2) **L 46**

Smith, C. O. Projects Valuable in Teaching Design (Ed) **MD 673**

Smith, D. E. The Equivalence of the Final Stretch and Crack Tip Opening Angle Criteria for Plane Strain Crack Growth **MT 148**

Smith, J. A., Dr. Design Technology Committee Overview (Ed) **MD 257**

Smith, L. C. An Analysis of Power Law Viscous Materials Under a Plane-Strain Condition Using Complex Stream and Stress Functions (81-WA/APM-1) **AM 486**

Smith, M. J. Turbomachinery Design Considerations for the Nuclear HTGR-GT Power Plant (80-GT-80) **P 65**

Smith, R. L. Asymptotic Distributions for the Failure of Fibrous Materials Under Series-Parallel Structure and Equal Load-Sharing **AM 75**

Smith, R. N. An Analytical Solution for the Thermal Characteristics of Journal Bearings **L 443**

Smith, R. W. Low-Pressure Plasma-Spray Coatings for Hot-Corrosion Resistance (80-GT-98) **P 146**

Smith, T. F. Effect of Corrugated Cover Directional Transmittance on the Thermal Performance of a Solar Collector **SE 144**

Smooth Concentric Annuli

An Improvement in the Calculation of Turbulent Friction in Smooth Concentric Annuli **F 615**

Smooth Tubes

Prediction of Heat Transfer Coefficients in Gas Flow Normal to Finned and Smooth Tube Banks **HT 705**

Smyth, K. A. The Wear of Polymers Sliding on Polymeric Films Deposited on Rough Surfaces (80-C2/Lub-24) **L 266**

Snider, A. D. A General Extended Surface Analysis Method **HT 699**

Snidle, R. W. Inverse Solution of Reynolds' Equation of Lubrication Under Point-Contact Elastohydrodynamic Conditions **L 530**; The Isothermal Elastohydrodynamic Lubrication of Spheres **L 547**; (D) (AC) **L 557**

Snyder, A. Heat Transfer in Cooled Porous Region with Curved Boundary **HT 765**

Sobin, S. S. The Retained Elasticity of Elastin Under Fixation Agents (TB) **BE 121**

Sodium

Density-Wave Oscillations in Sodium Heated Once-Through Steam Generator Tubes **HT 485**

Effect of Sodium, Potassium, Magnesium, Calcium, and Chlorine on the High Temperature Corrosion of In-100, U-700, IN-792, and MAR M-509 (80-GT-150) **P 294**

LMFBR Loss of Flow Simulations in the Sodium Loop Safety Facility **P 605**

Sodium-Heated Tubes

Critical Heat Flux Experiments and Correlation in a Long, Sodium-Heated Tube **HT 74**

Soeda, T. A Diagnosis Method for Linear Stochastic Systems With Parametric Failures **DS 28**; A Discrete-Time Adaptive Filter for Stochastic Distributed Parameter Systems **DS 266**

Soft Biological Tissues

Large Deformation Analysis of Some Soft Biological Tissues **BE 73**

Soft Metal Film

Frictional Properties of a Surface Covered With a Soft Metal Film—Part 1: Experiments on Friction Between a Single Protuberance and a Surface **L 236**

Sohn, C. W. Microconvective Thermal Conductivity in Disperse Two-Phase Mixtures as Observed in a Low Velocity Couette Flow Experiment **HT 47**

Soil Systems

Approximate Solution to Neumann Problems for Soil Systems (80-Pet-14) **ERT 78**

Phase Change Around a Circular Cylinder (TN) **HT 598**

Sojka, G. J. Strong Tough HSLA Steels Via Processing and Heat Treating of Cu-Ni-Cb and Cu-Ti-B Compositions **MT 207**

Solan, A. The Effect of Inertia on Flow Between Misaligned Rotating Disks (80-WA/FE-2) **F 82**; Rotating Compressible Flow Over the Edge of a Finite Disk (81-APM-19) **AM 249**

Solar Air Conditioning

Design and Testing of Thin Adiabatic Desiccant Beds for Solar Air Conditioning Applications **SE 89**

Solar Applications

Design Improvements in LiBr Absorption Chillers for Solar Applications **SE 56**

Solar Arrays

Glass as Encapsulation for Low-Cost Photovoltaic Solar Arrays **SE 221**

Solar-Assisted Heat Pumps

Solar-Assisted Heat Pump and Swimming Pool Synergy for Domestic Heating **SE 105**

Solar Central Receivers

Heliostat Characterization at the Central Receiver Test Facility **SE 82**

Solar Collector Arrays

Simulation of Thermal Performance of Solar Collector Arrays (81-WA/Sol-1) **SE 258**

Solar Collector Systems

The Interrelation between Recurrent and Capital Costs in a Solar Thermal Process Heat System **SE 241**

Solar Collectors

Analytical Dynamic Modeling of Line-Focus Solar Collectors **SE 244**

Design, Evaluation, and Testing of a Moderately Concentrating, Nontracking Solar Energy Collector **SE 34**

Design Optimization of Sinusoidal Glass Honeycomb for Flat Plate Solar Collectos **SE 268**

Effect of Corrugated Cover Directional Transmittance on the Thermal Performance of a Solar Collector **SE 144**

Experimental Comparison of Control Strategies for Solar Energy Systems Incorporating Dual Storage Tanks **SE 47**

Frequency Response Analysis of Fluid Control Systems for Parabolic Trough Solar Collectors **SE 339**

Mean Wind Loading on Parabolic-Trough Solar Collectors **SE 313**

Optimal Control of Mass Flow Rates in Flat Plate Solar Collectors **SE 113**

Optimization of Flow Passage Geometry for Air-Heating, Plate-Type Solar Collectors **SE 323**

Second Law Analysis and Synthesis of Solar Collector Systems SE 23
Temperature Variation in the Absorber Plate of an Air Heating Flat Plate Solar Collector (80-WA/Sol-2) SE 153
Theoretical and Experimental Study of an Air Solar Collector with an Evacuated Tube Cover SE 251
Uncertainty in Determining Thermal Performance of Liquid-Heating Flat-Plate Solar Collectors SE 126

Solar Cooled Houses
A Stochastic Analysis of a Solar Heated and Cooled House SE 158

Solar Energy
Analytical Dynamic Modeling of Line-Focus Solar Collectors SE 244
Design Optimization of Sinusoidal Glass Honeycomb for Flat Plate Solar Collectors SE 268
The Effect of Receiver Optical Properties on Solar Theraml Electric Systems SE 207
The Effects of Regional Insolation Differences upon Advanced Solar Thermal Electric Power Plant Performance and Energy Costs (79-WA/Sol-1) SE 213
Glass as Encapsulation for Low-Cost Photovoltaic Solar Arrays SE 221
The Interrelation between Recurrent and Capital Costs in a Solar Thermal Process Heat System SE 241
Log-Mean Temperature-Difference Correction Factors for Passive Latent-Heat Storage Units SE 281
Mini-OTEC Operational Results SE 233
Performance Characteristics of a Thermosyphon Solar Domestic Hot Water System SE 193
Performance of Storage Walls with Highly Conductive Covering Plates and Connecting Fins SE 201
Review, Evaluation, and Improvement of Direct Irradiance Models SE 182
The Role of Rear Insulation in the Performance of Flat Plate Solar Collectors SE 282
Simulation of Thermal Performance of Solar Collector Arrays (81-WA/Sol-1) SE 258
Solar Energy Handbook (BR) SE 362
Theoretical and Experimental Study of an Air Solar Collector with an Evacuated Tube Cover SE 251
Transient Response of a Latent Heat Storage Unit: An Analytical and Experimental Investigation SE 275

Solar Energy Development
Solar Energy Development in the People's Republic of China (Ed) SE 285

Solar Energy Engineering
An Algorithm for Calculating Monthly-Average Radiation on Inclined Surfaces SE 29
Ammonia Turbine Design for Ocean Thermal Energy Conversion (OTEC) Plants SE 92
Analysis and Design of Efficient Absorbers for Low-Temperature Desiccant Air Conditioners SE 67
An Analysis of the Influence of Geography and Weather on Parabolic Trough Solar Collector Design (80-C2/Sol-19) SE 98
Construction and Startup Performance of the Miamisburg Salt-Gradient Solar Pond SE 11
Design, Evaluation, and Testing of a Moderately Concentrating, Nontracking Solar Energy Collector SE 34
Design Improvements in LiBr Absorption Chillers for Solar Applications SE 56
Design Procedure and Application of Solar-Assisted Series Heat Pump Systems SE 135
Design and Testing of Thin Adiabatic Desiccant Beds for Solar Air Conditioning Applications SE 89
Effect of Corrugated Cover Directional Transmittance on the Thermal Performance of a Solar Collector SE 144
Entropy: A New World View (BR) SE 178
Experimental Comparison of Control Strategies for Solar Energy Systems Incorporating Dual Storage Tanks SE 47
Flow Field Analysis and Performance of Wind Turbines Employing Slotted Diffusers SE 17
Heliostat Characterization at the Central Receiver Test Facility SE 82
Helium Penetration in Evacuated Solar Collectors: Theory and Effect on Their Performance (TB) SE 175
High-Flux Solar Absorber Concept for Central Receiver Power Plants SE 52
In Situ Biofouling of Ocean Thermal Energy Conversion (OTEC) Evaporator Tubes SE 121
Natural Convection and Sidewall Losses in Trapezoidal Groove Collectors SE 167
Optimal Control of Mass Flow Rates in Flat Plate Solar Collectors SE 113
Overview of Wind Energy Systems: Issues in Development and Application SE 3
Radiation and Free Convection Shield for Passive Thermal Control (80-WA/Sol-7) SE 62
Retreat From the Future: The Administration's Energy Policy (Ed) SE 81
Rotational Interference for Darrieus Rotors (TB) S 173
Second Law Analysis and Synthesis of Solar Collector Systems SE 23
A Single-Stage Ammonia/Water Absorption Cycle With Integrated Heat Exchange Components SE 42
Solar-Assisted Heat Pump and Swimming Pool Synergy for Domestic Heating SE 105
Solar Energy (BR) S 75
Solar Priorities (Ed) SE 1
A Stochastic Analysis of a Solar Heated and Cooled House SE 158
Temperature Variation in the Absorber Plate of an Air Heating Flat Plate Solar Collector (80-WA/Sol-2) SE 153
Thermal Energy Storage and Regeneration (BR) SE 178
Uncertainty in Determining Thermal Performance of Liquid-Heating Flat-Plate Solar Collectors SE 126

Solar Energy Programs
Solar Energy Programs for HP-41 and TI-59 Calculators (BR) SE 362

Solar Engineering
Analysis and Design of Hybrid Double-Absorption Cooling Systems for Low Grade Thermal Energy Applications (80-WA/HT-44) SE 331
Analytical Predictions of Liquid and Air Photovoltaic/Thermal, Flat-Plate Collector Performance SE 291
Frequency Response Analysis of Fluid Control Systems for Parabolic Trough Solar Collectors SE 339
An Investigation of Thermal Stratification in Horizontal Storage Tanks SE 286
Material Property Data and Their Use in Design and Analysis for an Elevated Temperature Solar Code SE 345
Mean Wind Loading on Parabolic-Trough Solar Collectors SE 313
Mixed Layer Development in a Double-Diffusive Thermohaline System SE 351
A Numerical Model for the Flow Within the Tower of a Tornado-Type Wind Energy System SE 299
One Viewpoint Concerning Unit Size in the Development of Wind Turbines SE 306
Optimization of Flow Passage Geometry for Air-Heating, Plate-Type Solar Collectors SE 323
Solar Energy Development in the People's Republic of China (Ed) SE 285
Solar Energy Handbook (BR) SE 362
Solar Energy Programs for HP-41 and TI-59 Calculators (BR) SE 362
U.S. Contour Maps of Annual Energy Delivery by Flat Plate Collectors (TB) SE 380

Solar Gemini
The Civic: A Concept in Vortex Induced Combustion for the Solar Gemini 10 kW Gas Turbine (80-GT-54) P 34

Solar Heat Pump Systems
Design Procedure and Application of Solar-Assisted Series Heat Pump Systems SE 135

Solar Heated Houses
A Stochastic Analysis of a Solar Heated and Cooled House SE 158

Solar Hot Water
Performance Characteristics of a Thermosyphon Solar Domestic Hot Water System SE 193

Solar Irradiance
Review, Evaluation, and Improvement of Direct Irradiance Models SE 182

Solar Ponds
Construction and Startup Performance of the Miamisburg Salt-Gradient Solar Pond SE 11

Solar Power Plants
The Effects of Regional Insolation Differences upon Advanced Solar Thermal Electric Power Plant Performance and Energy Costs (79-WA/Sol-1) SE 213

Solar Power Systems
Material Property Data and Their Use in Design and Analysis for an Elevated Temperature Solar Code SE 345

Solar Specialists
Solar Energy (BR) SE 75

Solar Technology
Solar Priorities (Ed) SE 1

Solar Thermal Collectors
Solar Energy (BR) SE 75

Solar Thermal Systems
The Effect of Receiver Optical Properties on Solar Thermal Electric Systems SE 207

Solid Spheres
Creeping Viscous Flow Around a Heat-Generating Solid Sphere AM 239

Solid Waste
Biogasification of Municipal Solid Wastes ERT 180
Duluth Co-Disposal Facility ERT 262

Solid Waste Disposal
A Technical Evaluation of Modular Incinerators With Heat Recovery ERT 285

Solidification
Similarity Rule for Solidification Heat Transfer with Change in Volume (TN) HT 173

Solids
Dislocations in Solids: Dislocations in Metallurgy (BR) AM 451
Dislocations in Solids: Moving Dislocations (BR) AM 214
Dislocations in Solids: Other Effects of Dislocations: Disclinations (BR) AM 452
A Note on the Solution for Continuous Jet Penetration of Solids (TB) I 349
Quasi-Steady-State Temperature Distribution in Periodically Contacting Finite Regions HT 739
Thermally Symmetric Nonlinear Heat Transfer in Solids HT 745
Transient Thermal Expansion of Solids During Inert Heating, Phase Change, and Surface Gasification (TN) HT 601
Unsteady Heat Flow between Solids with Partially Contacting Interface HT 32

Solution Rectification
Implementation of Solution Rectification Techniques in an Interactive Linkage Synthesis Program (80-DET-91) MD 657

Somji, M. Linear Fluid Resistance Using Switching Valves and a Tank DS 352

Song, K. A Method of Analyzing the Three-Dimensional Stiffness Properties of the Intact Human Lumbar Spine (TB) BE 299

Soni, A. H. Accessible Region and Synthesis of Robot Arms (80-DET-101) MD 803

Sonn, A. Optimum Cylindrical Pin Fin (TN) HT 814

Soo, P. Development of a Procedure for Estimating the High Cycle Fatigue Strength of Some High Temperature Structural Alloys MT 97

Soom, A. Passive Acoustic Detection of Gas Leaks in Buried Pipes (80-WA/NC-17) I 314

Soong, T.-C. The Rolling Contact of Two Elastic-Layer-Covered Cylinders Driving a Loaded Sheet in the Nip AM 689

Soong, T. T. *(reviewer)* Structural Control (BR) AM 685

Soot
An Exploratory Study of Soot Sample Integrity and Probe Perturbation in a Swirl-Stabilized Combustor (81-GT-27) P 759
The Interrelationship between Soot and Fuel NO_x Control in Gas Turbine Combustors (80-GT-76) P 43
Soot Formation in a Turbulent Swirl Stabilized Laboratory Combustor (80-GT-77) P 49

Sootblowers
Water Tempered Cleaning Medium for Sootblowers P 561

Sound Propagation
Numerical Techniques in Linear Duct Acoustics—A Status Report (80-WA/NC-2) I 270

Sound Transmission
Sound Transmission Through a Cylindrical Pipe Wall

(80-WA/NC-3) I 355

Space
On the Space of Stress Invariants (BN) AM 664

Space Sampling
Space Sampling Effects in Nonlinear Distributed System Stability DS 54

Space Shuttle
The Development and Testing of the Space Shuttle Reaction Control System (78-WA/Aero-20) I 137

Spanos, P-T. D. Linear Prediction Theory for Digital Simulation of Sea Waves (81-Pet-7) ERT 243

Sparrow, E. M. Analytically Determined Fin-Tip Heat Transfer Coefficients HT 18; A Closed-Form Analytical Solution for Freezing Adjacent to a Plane Wall Cooled by Forced Convection (TN) HT 586; Effect of Plenum Length and Diameter on Turbulent Heat Transfer in a Downstream Tube and on Plenum-Related Pressure Losses HT 415; Effect of Vertical Separation Distance and Cylinder-to-Cylinder Temperature Imbalance on Natural Convection for a Pair of Horizontal Cylinders HT 638; Fluid Flow Through a Class of Highly-Deformable Porous Media Part I: Experiments With Air F 432; (D) F 438; (AC) F 439; Part II: Experiments With Water F 440; Heat Transfer from a Plate Elevated Above a Host Surface and Washed by a Separated Flow Induced by the Elevation Step HT 441; Measured Heat Transfer Coefficients at and Adjacent to the Tip of a Wall-Attached Cylinder in Crossflow—Application to Fins HT 778; Natural Convection Heat Transfer Coefficients for a Short Horizontal Cylinder Attached to a Vertical Plate HT 630; The Transition from Natural-Convection-Controlled Freezing to Conduction-Controlled Freezing HT 7

Spatial Kinematics
The Curvature Theory of Line Trajectories in Spatial Kinematics (80-DET-18) MD 718

Spatial Mechanisms
The Application of Finite Element Methods to the Dynamic Analysis of Flexible Spatial and Co-Planar Linkage Systems (80-DET-81) MD 643
Kinematic Analysis of Spatial Mechanisms Using Train Components MD 823

Spatial Shaping Filter
Nonstationary Response of Vehicles on Rough Ground—A State Space Approach DS 245

Specific Technologies
Design Technology Transfer Conference, review (CR) MD 259

Spheres
Effect of Wind-Tunnel Walls on the Drag of a Sphere F 461
Instantaneous Pressure Distribution Around a Sphere in Unsteady Flow F 497
The Isothermal Elastohydrodynamic Lubrication of Spheres L 547; (D) (AC) L 557

Spherical Cavity
Infiltration of a Fluid Into a Dry Poro-Elastic Body AM 259

Spherical Containers
Pendulum Analogy for Nonlinear Fluid Oscillations in Spherical Containers AM 769

Spherical Particles
The Effective Elastic Moduli of Porous Granular Rocks AM 803

Spherical Shells
On the Buckling Design of Spherical Shells (81-PVP-32) PVT 261
Effects of a Circular Hole on States of Uniform Twisting and Shearing in Shallow Spherical Shells (BN) AM 674
On the Influence of a Rigid Circular Inclusion on the Twisting and Shearing of a Shallow Spherical Shell (Er) AM 215

Spin
A Simple Thermal Correction for Large Spin Traction Curves (80-C2/DET-60) MD 440; (D) MD 445; (AC) MD 446

Spinal Cords
Biomechanical and Neurological Response of the Spinal Cord of a Puppy to Uniaxial Tension (Er) BE 279

Spindling
Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) MD 127; (D) MD 133; (AC) MD 133

Spinning Cone
Heat Transfer from a Cone Spinning in a Corotating Fluid (TN) HT 815

Spinning Spherical Cavity
Motion of a Bored Sphere in a Spinning Spherical Cavity DS 389

Spinodal Line
Homogeneous Nucleation and the Spinodal Line HT 61

Spiral Bevel Gears
Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) MD 127
A Method of Local Synthesis of Gears Grounded on the Connections Between the Principal and Geodetic Curvatures of Surfaces (80-C2/DET-30) MD 114; (D) MD 122
Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform"—Part 1. Calculations For Machine Settings for Member Gear Manufacture of the Formate and Helixform Hypoid Gears (80-C2/DET-31) MD 83; Part 2. Machine Setting Calculations for the Pinions of Formate and Helixform Gears MD 89; Part 3. Analysis and Optimal Synthesis Methods for Mismatch Gearing and its Application For Hypoid Gears of "Formate" and "Helixform" (80-C2/DET-33) MD 102; (D) MD 110; (AC) MD 112

Spiral Coils
Basic Transport Equations in Ascending Equiangular Spiral Polar Coordinates (BN) AM 190

Spiral-Groove Membranes
Design and Performance of Compliant Thrust Bearings With Spiral-Groove Membranes on Resilient Supports (80-C2/Lub-36) L 373; (D) L 385; 388; (AC) L 386

Spiral Polar Coordinates
Basic Transport Equations in Ascending Equiangular Spiral Polar Coordinates (D) AM 985

Split Flow
A Comparison of Thermal Performance of Two and Four Tube Pass Designs for Split Flow Shells HT 169

Split Rings
The Use of the Split Ring in Modeling Ductile Axial Crack Extension in Pipes PVT 151

Spool Valves
Cavitation Inception in Spool Valves F 564; (D) F 575; (AC) F 576

Spray Analysis
Some Effects of Using Water as a Test Fluid in Fuel Nozzle Spray Analysis (80-GT-90) P 118

Spray Evaporation
A Numerical Solution to Dropwise Evaporation HT 501

Spray Units
A Three-Dimensional Air-Vapor-Droplet Local Interaction Model for Spray Units HT 514

Spring Arrangements
Ride Quality Analysis of Multi-Level Auto Rack Equipped Flat Cars (79-WA/RT-4) I 241

Spring Elements
The Simultaneous Analytical Synthesis of Mass and Spring Elements in Planar Mechanisms (80-DET-50) MD 758

Spring Hinges
Free Vibration of a Beam Supported by Unsymmetrical Spring Hinges (Er) AM 449

Springs
Study on Vibratory Feeders: Calculation of Natural Frequency of Bowl-Type Vibratory Feeders MD 249

Spur Gearing
An Extended Model for Determining Dynamic Loads in Spur Gearing (80-C2/DET-90) MD 398

Spur Gears
Analytical and Experimental Spur Gear Tooth Temperature as Affected by Operating Variables (80-C2/DET-34) MD 219
Bending Fatigue Tests of High Speed Spur Gears (80-C2/DET-87) MD 466
Calculation of Contact Ratios for Plastic/Plastic or Plastic/Steel Spur Gear Pairs (80-C2/DET-105) MD 528
Compliance and Stress Sensitivity of Spur Gear Teeth (80-C2/DET-24) MD 447
Effect of Geometry and Operating Conditions on Spur Gear System Power Loss (80-C2/DET-39) MD 151
Effect of Molecular Weight Distribution of Mineral Oil on Tribofailure of Spur Gears MD 210
The Efficiency of Involute Spur Gears MD 180
Endurance and Failure Characteristics of Modified Vasco X-2, CBS 600 and AISI 9310 Spur Gears (80-C2/DET-58) MD 506; (D) MD 514; (AC) MD 514, 515
Numerical Implementation of Complex Potentials for Gear Tooth Stress Analysis (80-C2/DET-86) MD 460
A Numerical Solution to the Dynamic Load, Film Thickness, and Surface Temperatures in Spur Gears, Part I Analysis MD 177; Part II Results MD 188
Simulation of Hertzian Contacts Found in Spur Gears with a High Performance Disk Machine MD 204

Sputtered Coatings
Friction and Wear Results From Sputter-Deposited Chrome Oxide With and Without Nichrome Metallic Binders and Interlayers (80-C2/Lub-49) L 218

Sputtering
Structural and Compositional Characterization of RF Sputter-Deposited Ni-Cr + Cr_2O_3 Films (80-C2/Lub-31) L 211

Square Cylinders
Vibrations of Square and Hexagonal Cylinders in a Liquid PVT 233

Square Holes
Quasi-Square Hole With Optimum Shape in an Infinite Plate Subjected to In-Plane Loading (80-WA/DE-3) MD 866

Square Plates
Stress Distribution Around a Circular Hole in Square Plates, Loaded Uniformly in the Plane, on Two Opposite Sides of the Square (BN) AM 203

Square Tubes
Steady Laminar Flow through Twisted Pipes. Fluid Flow in Square Tubes HT 785

Squeal/Chatter
Generation of Squeal/Chatter in Water-Lubricated Elastomeric Bearings (80-C2/Lub-45) L 406; (D) (AC) L 413

Squeeze Film
Rubber Surface Squeeze Film (80-C2/Lub-33) L 398; (D) (AC) L 404

Squeeze-Film Bearings
A Comparison of Multifrequency Techniques for Measuring the Dynamics of Squeeze-Film Bearings (80-C2/Lub-46) L 137
On the Mean Reynolds Equation in the Presence of Surface Roughness: Squeeze-Film Bearing AM 717

Squeezing Flow
Similarity Solutions to the Nonisothermal, Two-Dimensional Squeezing Flow of a Viscous Fluid (BN) AM 670

Sridhar, K. Developing Region of Laminar Jets With Parabolic Exit Velocity Profiles (81-FE-3) F 322

Srivastava, L. M. The Plane Parallel Flow of a Binary Mixture of Fluids AM 707

Srivastava, V. P. The Plane Parallel Flow of a Binary Mixture of Fluids AM 707

Stability
A Comparison of the Stability and Curving Performance of Radial and Conventional Rail Vehicle Trucks DS 191
Linear Spatial Stability of Developing Flow in a Parallel Plate Channel (BN) AM 192
A Procedure to Generate Liapunov Functional for Distributed Parameter Systems (BN) AM 188
Reexamination of Stability of a Two-Dimensional Finite Panel Exposed to an Incompressible Flow AM 472
Space Sampling Effects in Nonlinear Distributed System Stability DS 54
On the Stability of a Composite Beam With Initial Stress to Moving Loads (81-APM-25) AM 368
Stability and Curving Mechanics of Rail Vehicles (80-WA/DSC-15) DS 181
Stability of Developing Flow in a Pipe—Nonparallel Effects (81-APM-13) AM 243
On the Stability of Equilibrium Paths Associated With Autonomous Systems (81-APM-9) AM 183
The Stability of Pumping Systems—The 1980 Freeman Scholar Lecture F 193

Stability of Thermoelastic Contact for the Aldo Model **AM 555**

Stability Theorems for Multidimensional Linear Systems With Variable Parameters **AM 174**

On the Uniqueness and Stability of Endochronic Theory (D) **AM 985**; (AC) **AM 986**

Stabilization

Stabilization of an Unstable Linear System by Parametric White Noise (BN) **AM 198**

Stachiw, J. D. Polycarbonate Plastic Inserts for Spherical Arcrylic Plastic Shells Under Hydrostatic Losding **I 90**

Stainless Steel Pipes

A Sensitivity Study on Numerical Analysis of Dynamic Girth Crack Propagation (80-C2/PVP-107) **PVT 169**

Stair Case Effect

On the Savart-Masson Effect (BN) **AM 426**

Staggered Airfoil Cascades

Forces on Staggered Airfoil Cascades in Unsteady In-Phase Motion **F 299**

Staggered Tube Bundles

Heat Transfer to Oil Shale in a Closely Spaced Bundle as an Approximation to a Packed Bed (79-WA/HT-34) **ERT 307**

Stagnation

Unsteady Stagnation Point Heat Transfer with Blowing or Suction **HT 448**

Stagnation Point

Droplet Evaporation in High Temperature Environments (79-WA/HT-6) **HT 86**

Stainless Steel

Creep and Creep Recovery of 304 Stainless Steel at Low Stresses With Effects of Aging on Creep and Plastic Strains (81-WA/APM-17) **AM 785**

Stainless Steel Pipes

A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part I: J-Integral Analysis (80-WA/PVP-3) **PVT 352**; Part II: Experimental Verification on a Type 304 Stainless Steel Pipe (80-WA/PVP-4) **PVT 359**

Stall

Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) **F 391**; (D) (AC) **F 395**

A Prediction Method for Planar Diffuser Flows (81-FE-5) **F 315**

Stalling Pressure Rise

Stalling Pressure Rise Capability of Axial Flow Compressor Stages (81-GT-3) **P 645**

Stansby, P. K. Pressure and Vortex Shedding Patterns Around a Low Aspect Ratio Cylinder in a Sheared Flow at Transcritical Reynolds Numbers (D) **F 373**; (AC) **F 374**

Stanway, R. Active Vibration Control of a Flexible Rotor on Flexibly-Mounted Journal Bearings (81-WA/DSC-5) **DS 383**; A Comparison of Multifrequency Techniques for Measuring the Dynamics of Squeeze-Film Bearings (80-C2/Lub-46) **L 137**

Starke, J. The Effect of the Axial Velocity Density Ratio on the Aerodynamic Coefficients of Compressor Cascades (80-GT-134) **P 210**

Stark, U. The Combined Effect of Axial Velocity Density Ratio and Aspect Ratio on Compressor Cascade Performance (80-GT-138) **P 247**

Stasa, F. L. The Thermodynamic Performance of Two Combined Cycle Power Plants Integrated with Two Coal Gasification Systems **P 572**

State Space

A Note on Avoidance Control **DS 69**

State Space Form

Nonstationary Response of Vehicles on Rough Ground—A State Space Approach **DS 245**

State Models

State Models of Dynamic Systems: A Case Study Approach (BR) **DS 297**

State Variables

A Phenomenological Model for Transient Deformation Based on State Variables **MT 314**

Static Aeroelasticity

A Modern Course in Aeroelasticity (BR) **MD 261**

Static Deflections

Effects of Moving Speeds of Dynamic Loads on the Deflections of Gear Teeth **MD 357**

Static Hardness

A Critical Appraisal of Static Hardness Measurements **AM 796**

Static Stress

Fatigue Criteria Under Combined Stresses or Strains **MT 82**

Stationary Pressure Transducers

Flutter Spectral Measurements Using Stationary Pressure Transducers **P 461**

Statistical Linearization

Improved Statistical Linearization for Analysis and Control of Nonlinear Stochastic Systems—Part I: An Extended Statistical Linearization Technique **DS 14**; Part II: Application to Control System Design **DS 22**

Steady Conduction

An Iterative Boundary Integral Numerical Solution for General Steady Heat Conduction Problems **HT 26**

Steady Laminar Flow

Steady Laminar Flow through Twisted Pipes. Heat Transfer in Square Tubes **HT 791**

Steady Motion

Steady Motion of an Elastic Beam Across a Rigid Step (81-WA/APM-7) **AM 606**

Steam

An Evaluation of Steam Injected Combustion Turbine Systems (80-GT-51) **P 13**

Evaporation of Small Water Drops Containing Salt in a High Pressure Steam Environment (76-WA/FE-35) **F 112**

Piping Response to Steam-Generated Water Hammer **PVT 219**

Steam Condensation

Steam Condensation on Various Gold Surfaces (81-HT-15) **HT 685**

Steam Generator Tubes

Density-Wave Oscillations in Sodium Heated Once-Through Steam Generator Tubes **HT 485**

Steam Generators

A Mathematical Model for Heat Transfer in Combustion Chambers of Steam Generators **P 545**

Steam Injection

An Evaluation of Steam Injected Combustion Turbine Systems (80-GT-51) **P 13**; (D) **P 17**; (AC) **P 18**

State-of-the-Art of Thermal Recovery Models **ERT 295**

Steam Turbines

A First Principles Model for Steam Turbine Control Analysis **DS 61**

Long Arc Shrouding—A Reliability Improvement for Untuned Steam Turbine Blading (78-JPGC/Pwr-12) **P 522**; (D) **P 527, 528, 530**; (AC) **P 528, 529, 530**

Steel

Age Softening Characteristics of Annealed 2-¼ Cr-1 Mo Steel in the Temperature Range 424 to 704°C **MT 62**

Corrosion Fatigue Crack-Growth Behavior of HY-130 Steel and Weldments **PVT 314**

The Creep Rupture Properties of ASME SA 516 (Grade 55) Steel in the Range 426°C to 872°C **MT 253**

Cyclic Behavior of Class U Wheel Steel (80-WA/RT-9) **I 113**

The Effect of a Higher Loading Rate on the J_{Ic} Fracture Toughness Transition Temperature of HY Steels **MT 133**

An Explanation for the Effects of Hold Periods on the Elevated Temperature Fatigue Behavior of 2¼ Cr-1 Mo Steel **MT 7**

The Fatigue and Toughness Properties of a C-Mn-Cb Plate Steel (Er) **MT 263**

Flow Stresses of Prestrained Annealed OFHC Copper and SAE 1018 Steel **MT 188**

Strong Tough HSLA Steels Via Processing and Heat Treating of Cu-Ni-Cb and Cu-Ti-B Compositions **MT 207**

Steel Contacts

Failure of Thin Film Lubrication—An Expedient for the Characterization of Lubricants (80-C2/Lub-43) **L 497**; (D) **L 501**; (AC) **L 502**

Steel Disks

Modeling of a Rotary Dry Cooling Tower (80-HT-95) **HT 715**

Steel Rings

Materials for Generator Retaining Rings **MT 267**

Steel Rollers

Effects of Case Depth and Relative Radius of Curvature on Surface Durability of Case-Hardened Chromium Molybdenum Steel Roller (80-C2/DET-37) **MD 474**

Stefan Problems

The Exact Solutions of Some Stefan Problems With Prescribed Heat Flux **AM 732**

Stein, P. D. Effect of Vessel Tapering on the Transition to Turbulent Flow: Implications in the Cardiovascular System **BE 116**; Flow Visualization in a Mold of an Atherosclerotic Human Abdominal Aorta **BE 168**

Stein, P. G. Design and Performance of Compliant Thrust Bearings With Spiral-Groove Membranes on Resilient Supports (80-C2/Lub-36) **L 373**; (D) **L 385, 386**; (AC) **L 386**

Step Changes

Turbulent Shear Flows Over a Step Change in Surface Roughness **F 344**

Stephens, R. I. *(author)* Metal Fatigue in Engineering (1980) (BR) **MT 346**

Stern Tube Bearings

Generation of Squeal/Chatter in Water-Lubricated Elastomeric Bearings (80-C2/Lub-45) **L 406**; (D) (AC) **L 413**

Stethoscopes

Esophageal Accelerometer—Indicator of Cardiovascular Function **BE 160**

Stetson, K. A. Redesign of Structural Vibration Modes by Finite-Element Inverse Perturbation (80-GT-167) **P 319**

Stetson, R. F. Creep Rupture Bending Test of 20 Percent Cold-Prestrained Ni-Fe-Cr Alloy Straight Tubes at 1100 F (593C) (80-C2/PVP-18) **PVT 337**

Stevenson, R. A Comparison of Constitutive Relations Incorporating Strain-Rate Hardening (TB) **MT 261**

Stewart, M. B. Drag on a Droplet in Translating Fluctuating Flow (BN) **AM 436**; Droplet Dynamics in Creeping Flows (81-APM-29) **AM 224**

Stewartson, K. The Linear Instability Due to the Compressible Crossflow on a Swept Wing (D) (AC) **F 179**

Stiefel, E. *(author)* Methoden der analytischen Störungsrechnung und ihre Anwendunge (BR) **AM 684**

Stiffness

On Stiffness and Strength of an Aligned Short-Fiber Reinforced Composite Containing Fiber-End Cracks Under Uniaxial Applied Stress **AM 361**

Stirling Engine

Analysis and Design of a Uniform-Clearance, Pumping-Ring Rod Seal for the Stirling Engine **MD 67**

A Mathematical Model for the Stirling Engine Cycle **P 505**

Stochastic Analysis

A Stochastic Analysis of a Solar Heated and Cooled House **SE 158**

Stochastic Behavior

Stochastic and Fuzzy Decision Problems in Three-Workpiece Lapping Process **I 192**

Stochastic Model

A Stochastic Tool-Life Model **I 126**

Stokes, V. K. On the Space of Stress Invariants (BN) **AM 664**

Stokesian Flow

A Numerical Study of Nonaxisymmetric Stokesian Flow in a Circular Tube (81-WA/APM-16) **AM 459**

Stokić, D. One Engineering Concept of Dynamic Control of Manipulators **DS 108**

Stolarski, T. An Analysis of Contact Between a Pair of Surface Asperities During Sliding **AM 493**

Stolarski, T. A. The Influence of Linear and Rotating Motions on the Friction of Polymers (80-C2/Lub-44) **L 503**; (D) **L 507**; (AC) **L 508**

Stone, D. H. Cyclic Behavior of Class U Wheel Steel (80-WA/RT-9) **I 113**

Stonesifer, R. B. Stress Intensity Factors due to Residual Stresses in Thin-Walled Girth-Welded Pipes (79-PVP-30) **PVT 66**

Storage Tanks

Experimental Comparison of Control Strategies for Solar Energy Systems Incorporating Dual Storage Tanks **SE 47**

Storage Walls
Performance of Storage Walls with Highly Conductive Covering Plates and Connecting Fins **SE 201**
Radiation and Free Convection Shield for Passive Thermal Control (80-WA/Sol-7) **SE 62**
Stored Energy Function
On Thermodynamics and Kinetic Theory of Ideal Rubber Membranes **AM 345**
Straalsund, J. L. Multispecimen Fatigue Crack Propagation Testing **MT 240**
Straight Nozzle Cascade
Influence of Mach Number and End Wall Cooling on Secondary Flows in a Straight Nozzle Cascade (80-GT-52) **P 257**; (D) **P 263**; (AC) **P 264**
Straight Symmetric Tubes
Effect of Vessel Tapering on the Transition to Turbulent Flow: Implications in the Cardiovascular System **BE 116**
Strain
Crack-Tip Stress and Strain Singularity in Thermally Loaded Elastic-Plastic Materials (BN) **AM 428**
Development of a Procedure for Estimating the High Cycle Fatigue Strength of Some High Temperature Structural Alloys **MT 97**
Fatigue Criteria Under Combined Stresses or Strains **MT 82**
On the Formulation of Strain-Space Plasticity With Multiple Loading Surfaces (81-WA/APM-20) **AM 773**
Strain-Dependent Permeability
Effects of Nonlinear Strain-Dependent Permeability and Rate of Compression on the Stress Behavior of Articular Cartilage **BE 61**
Strain-Energy Density Function
Large Plane-to-Surface Deformations of Membranes With Inclusion **AM 357**
Strain-Hardening
On the Characterization of Strain-Hardening in Plasticity (81-APM-26) **AM 285**
Ductile Tearing Instability of a Center-Cracked Panel of an Elastic-Plastic Strain Hardening Material **MT 46**
Strain-Rate Hardening
A Comparison of Constitutive Relations Incorporating Strain-Rate Hardening (TB) **MT 261**
Strain Rates
Dynamic Analysis of a Torsion Test Specimen Including Heat Conduction and Plastic Flow **MT 201**
The Rate (Time)-Dependent Behavior of Ti-7Al-2Cb-1 Ta Titanium Alloy at Room Temperature Under Quasi-Static Monotonic and Cyclic Loading (81-APM-7) **AM 55**
Strain Relaxation
Application of Finite Element Calculations to Residual Stress Measurements **MT 157**
Strain Space
On the Characterization of Strain-Hardening in Plasticity (81-APM-26) **AM 285**
Strain Trajectories
Plastic Deformation Behavior of Mild Steel Along Orthogonal Trilinear Strain Trajectories in Three-Dimensional Vector Space of Strain Deviator **MT 287**
Strazisar, A. J. Efficient Laser Anemometer for Intra-Rotor Flow Mapping in Turbomachinery **P 424**; Laser Anemometer Measurements in a Transonic Axial Flow Compressor Rotor **P 430**
Stream Function
An Analysis of Power Law Viscous Materials Under a Plane-Strain Condition Using Complex Stream and Stress Functions (81-WA/APM-1) **AM 486**
Stream Tube Models
Rotational Interference for Darrieus Rotors (TB) **SE 173**
Streed, E. R. Uncertainty in Determining Thermal Performance of Liquid-Heating Flat-Plate Solar Collectors **SE 126**
Stress
An Analysis of Grain Size and Yield Stress Effects on Stress at Fatigue Limit and Threshold Stress Intensity Factor **MT 229**
The Analytical and Experimental Evaluation of Resonant Response in High-Speed, Lightweight, Highly Loaded Gearing (80-C2/DET-22) **MD 348**
Application of Finite Element Calculations to Residual Stress Measurements **MT 157**
Contact Stresses Between Elastic Cylinders: A Comprehensive Theoretical and Experimental Approach (80-C2/Lub-29) **L 40**
A Correct Definition of Elastic and Plastic Deformation and Its Computational Significance **AM 35**
Crack-Tip Stress and Strain Singularity in Thermally Loaded Elastic-Plastic Material (BN) **AM 428**
Creep of 2618 Aluminum Under Side-Steps of Tension and Torsion and Stress Reversal Predicted by a Viscous-Viscoelastic Model (81-APM-8) **AM 47**
A Criterion for Low-Cycle Fatigue Failure Under Biaxial States of Stress **MT 1**
A Criterion for Plastic Failure of Notched High Strength Steel Structures **MT 142**
Critical Compressive Stress of a Beam-Column to a Second Order (BN) **AM 978**
The Dynamic Response of Vascular Endothelial Cells to Fluid Shear Stress **BE 177**
Finite Element Analysis of Hydraulic Cylinders (80-DE-3) **MD 239**
An Improvement of the Stress Calculations in Plane Elasticity by Use of Spline Functions (BN) **AM 972**
Large Deformation Analysis of Some Soft Biological Tissues **BE 73**
A New Approach to the Evaluation of Fatigue Under Multiaxial Loadings **MT 118**
Numerical Implementation of Complex Potentials for Gear Tooth Stress Analysis (80-C2/DET-86) **MD 460**
Some Considerations on Thermal Shock Problems in a Plate **AM 113**
Stress Concentrations in Cylindrically Orthotropic Composite Plates With a Circular Hole **AM 563**
Stress Distribution Around a Circular Hole in Square Plates, Loaded Uniformly in the Plane, on Two Opposite Sides of the Square (BN) **AM 203**
Stress Intensity Factors for Corner Cracked Holes Under General Loading Conditions **MT 171**
Thermal Stresses in Severe Environments (BR) **AM 453**
Stress Analysis
Stress Analysis of Axisymmetric Rotating Disks (TB) **MD 922**
Stress Analysis of O. D. Notched Thick-Walled Cylinders Subjected to Internal Pressure or Thermal Loads **PVT 76**
Stress Behavior
Effects of Nonlinear Strain-Dependent Permeability and Rate of Compression on the Stress Behavior of Articular Cartilage **BE 61**
Stress Correction Factors
Rating Gear Strength (80-C2/DET-88) **MD 516**
Stress Distribution
Comments on Aleck's Stress Distribution in Clamped Plates (BN) **AM 442**
Finite Element Analysis with the State Variable Transfer Matrix and Geometric Nonlinearity for Marine Pipelines in Subsurface Tow (80-Pet-47) **ERT 26**
The Stress Distribution in Orthotropic Rotating Disks **AM 559**
Stress Fields
On Energy-Release Rates for a Plane Crack (81-WA/APM-3) **AM 525**
Stress Field Due to a Cylindrical Inclusion With Constant Axial Eigenstrain in a Infinite Elastic Body **AM 853**
Stress Fluctuation
Stress Fluctuation in High Speed Mechanisms (80-DET-21) **MD 736**
Stress Function
An Analysis of Power Law Viscous Materials Under a Plane-Strain Condition Using Complex Stream and Stress Functions (81-WA/APM-1) **AM 486**
Stress-Intensity Factors
The Effect of Crack-Tip Plasticity on the Determination of Dynamic Stress-Intensity Factors by the Optical Method of Caustics **AM 302**
Stress-Intensity Factor for a Three-Dimensional Rectangular Crack **AM 309**
Stress Intensity Factors due to Residual Stresses in Thin-Walled Girth-Welded Pipes (79-PVP-30) **PVT 85**
Stress Invariants
On the Space of Stress Invariants (BN) **AM 664**
Stress Ratios
The Effects of Periodic High Loads on Fretting Fatigue **MT 223**
Threshold and Low-Rate Fatigue Crack Growth of a NiMoV Rotor Steel **MT 104**
Stress Relaxation
A Self-Consistent Scheme for the Relaxation Behavior of Metals (81-WA/APM-14) **AM 779**
Stress Sensitivity
Compliance and Stress Sensitivity of Spur Gear Teeth (80-C2/DET-24) **MD 447**
Stress-Strain Relations
On Stress-Strain Relations Suitable for Cyclic and Other Loading (81-WA/APM-6) **AM 479**
Stress Waves
Theoretical and Experimental Investigation of Stress Waves at a Junction of Three Bars (81-APM-16) **AM 148**
Stretch Zone
Fracture Toughness of 4130 Quenched and Tempered Steel **MT 55**
Striation Effect
Cavitation in a Short Bearing With Pressurized Lubricant Supply (80-C2/Lub-47) **L 337**; (D) **L 346**; (AC) **L 347**
Strickland, L. D. Field Results From a Linked Vertical Well UCG Test in Deep, Thin-Seam Bituminous Coal **ERT 277**
Strigberger, J. A Numerical Study of Nonaxisymmetric Stokesian Flow in a Circular Tube (81-WA/APM-16) **AM 459**
Stringer Axial Stiffness
Mode Interaction of Axially Stiffened Cylindrical Shells: Effects of Stringer Axial Stiffness, Torsional Rigidity, and Eccentricity (81-WA/APM-28) **AM 915**
Stripling, T. E. Long-Distance, High-Volume Transport of Coal by Slurry Pipeline (80-WRK/Pet-1) **ERT 322**
Strong, B. R., Jr. TRANS2A: An Unconditionally Stable Code for Thermal Transient Stress Analysis in Piping **PVT 50**
Strong, R. T. Implementation of Solution Rectification Techniques in an Interactive Linkage Synthesis Program (80-DET-91) **MD 657**
Strong Tough Steels
Strong Tough HSLA Steels Via Processing and Heat Treating of Cu-Ni-Cb and Cu-Ti-B Compositions **MT 207**
Structural Boundaries
A Structural Priority Approach to Fluid-Structure Interaction Problems **PVT 142**
Structural Control
Structural Control (BR) **AM 685**
Structural Mechanics
Structural Mechanics Software Series—Vol. II (BR) **MD 558**
Structures
A Criterion for Plastic Failure of Notched High Strength Steel Structures **MT 142**
Nonlinear Dynamic Analysis of a Structure Subjected to Multiple Support Motions (80-C2/PVP-52) **PVT 27**
Preliminary Design Analysis of a Catalytic Ceramic Structure in a Turbine Combustor (78-WA/GT-10) **P 338**
Redesign of Structural Vibration Modes by Finite-Element Inverse Perturbation (80-GT-167) **P 319**
Uncoupling Approximations in Fluid-Structure Interaction Problems With Cavitation **AM 753**
Struts
Optimum Strut-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) **F 294**
Stubbs, P. W. R. The Development of a Perbury Traction Transmission for Motor Car Applications (80-C2/DET-59) **MD 29**
Studley, B. C. Utility Operations: An Effective and Economic Approach to Operator Training (80-JPGC/Pwr-2) **P 348**
Su, K. C. A Methodology of Predicting Cavity Geometry Based on the Scanned Surface Temperature Data—Prescribed Heat Flux at the Cavity Side (79-WA/HT-45) **HT 42**
Subcooled Boiling
An Analytical and Experimental Investigation of Bubble Waiting Time in Nucleate Boiling **HT 673**

Sublimation
An Exact Solution of the Sublimation Problem in a Porous Medium **HT 165**
Submarine Pipelines
Field and Laboratory Studies for Evaluating Submarine Pipeline Frictional Resistance **ERT 250**
Model Studies on Immediate Settlement Behavior of Submarine Pipelines **ERT 254**
Subrahmanyam, K. B. Application of the Reissner Method to a Timoshenko Beam (BN) **AM 672**
Subsonic Coaxial Jets
Initial Region of Subsonic Coaxial Jets of High Mean-Velocity Ratio **F 335**
Substructuring
On the Dynamic Simulation of Large Nonlinear Mechanical Systems. Part 1: An Overview of the Simulation Technique. Substructuring and Frequency Domain Considerations (80-DET-66) **MD 849**; Part 2: The Time Integration Technique and Time Response Loop (80-DET-67) **MD 857**
Subsurface Cracks
Elastodynamic Stress-Intensity Factors for a Crack Near a Free Surface **AM 539**
Subsurface Tow
Analysis of the Horizontal to Vertical Orientation of Deep Water Risers (80-Pet-67) (TB) **ERT 106**
Finite Element Analysis With the State Variable Transfer Matrix and Geometric Nonlinearity for Marine Pipelines in Subsurface Tow (80-Pet-47) **ERT 26**
Subway Vehicles
Lateral Dynamics of a Rail Transit Vehicle: A Comparison of Experimental and Theoretical Results **DS 39**
Suction
Unsteady Stagnation Point Heat Transfer with Blowing or Suction **HT 448**
Sud, I. Drag Calculations for Vehicles in Very Long Tubes From Turbulent Flow Theory **F 361**
Sugimoto, K. Determination of Extreme Distances of a Robot Hand—Part 1 A General Theory (80-DET-57) **MD 631**; Part 2: Robot Arms With Special Geometry (80-DET-58) **MD 776**
Sugimoto, N. Nonlinear Theory for Flexural Motions of Thin Elastic Plate—Part 1: Higher-Order Theory **AM 377**; Part 2: Boundary-Layer Theory Near the Edge **AM 383**
Sui, T. K. Payoff Sensitivity of Linear Quadratic Differential Games to Parameter Change **DS 36**
Suliciu, I. On the Savart-Masson Effect (BN) **AM 426**
Sullivan, A. M. Editorial **MT 187**; *(reviewer)* Metallic Materials Specification Handbook (BR) **MT 347**
Sullivan, C. W. Experimental and Analytical Investigation of a Natural Circulation System with Parallel Loops **HT 645**
Sullivan, D. A. Historical Review of Real-Fluid Isentropic Flow Models (79-WA/FM-1) **F 258**
Sullivan, J. M. *(editor)* Proceedings of Noise-CON 79, Machinery Control Noise (BR) **MD 251**
Summerfield, M. *(editor)* Injection and Mixing in Turbulent Flow (BR) **AM 988**
Summers, A. A. Potential Advantages to Water Jet Drilling for Use in In-Situ Coal Gasification Processes (80-PET-76) **ERT 147**
Sun, F. Analysis of Motions of a Catamaran in Arbitrary Heading Waves **ERT 219**
Sun, K. H. A Nondimensional Analysis of Boiling Dry a Vertical Channel with a Uniform Heat Flux **HT 667**
Sunada, W. The Application of Finite Element Methods to the Dynamic Analysis of Flexible Spatial and Co-Planar Linkage Systems (80-DET-87) **MD 843**
Superhybrid Composites
Superhybrid Composite Blade Impact Studies (81-GT-24) **P 731**
Supporting Structure
Acceleration of Unbalanced Rotor Through the Resonance of Supporting Structure (81-APM-24) **AM 419**
Supports
How to Optimally Support a Plate (BN) **AM 207**
Nonlinear Dynamic Analysis of a Structure Subjected to Multiple Support Motions (80-C2/PVP-52) **PVT 27**
Surface Asperities
An Analysis of Contact Between a Pair of Surface Asperities During Sliding **AM 493**
Surface Conditions
Applicability of the Bubble Flux Density Concept (TN) **HT 175**
Surface Corrugations
Investigation Into the Influence of Dynamic Forces on the Tribological Behavior of Bodies in Rolling/Sliding Contact With Particular Regard to Surface Corrugations (80-C2/Lub-52) **L 26**
Surface Durability
Effects of Hunting Gear Ratio Upon Surface Durability of Gear Teeth (80-C2/DET-35) **MD 227**
Tooth Bearing Analysis and Surface Durability of Symmetrical Conformal Gears **MD 141**
Surface Film
Frictional Properties of a Surface Covered With a Soft Metal Film—Part 1: Experiments on Friction Between a Single Protuberance and a Surface **L 236**
Surface Formation
On Some Aspects of Surface Formation in ECM **I 341**
Surface Gasification
Transient Thermal Expansion of Solids During Inert Heating, Phase Change, and Surface Gasification (TN) **HT 601**
Surface Generation
A Data Dependent Systems Approach to Dynamics of Surface Generation in Turning **I 437**
Surface Hardened Gears
Some Factors Influencing the Pitting, Micro-Pitting (Frosted Areas) and Slow Speed Wear of Surface Hardened Gears (80-C2/DET-89) **MD 499**
Surface Heater
Semi-Transparent Gold Film as Simultaneous Surface Heater and Resistance Thermometer for Nucleate Boiling Studies **HT 65**
Surface Irregularity
Contact Stress Between Rollers With Surface Irregularity (80-C2/DET-10) **MD 492**
Surface Layers
Strength of the Surface Layer of Mild Steel **MT 282**
Surface Roughness
Heat Transfer in the Accelerated Fully Rough Turbulent Boundary Layer **HT 153**
In-Process Measurement of Surface Roughness in Turning by Laser Beams (80-WA/Prod-17) **I 203**
On the Mean Reynolds Equation in the Presence of Surface Roughness: Squeeze-Film Bearing **AM 717**
A Method to Measure Contact Pressure Between Metallic Surfaces by Changes in Surface Roughness (80-WA/Prod-18) **I 210**
Turbulent Shear Flows Over a Step Change in Surface Roughness **F 344**
Surface Temperatures
Analytical and Experimental Spur Gear Tooth Temperature As Affected by Operating Variables (80-C2/DET-34) **MD 219**
Contact Temperature in Dry Bearings. Three Dimensional Theory and Verification (80-C2/Lub-40) **L 243**; (D) (AC) **L 252**
A Methodology of Predicting Cavity Geometry Based on the Scanned Surface Temperature Data—Prescribed Heat Flux at the Cavity Side (79-WA/HT-45) **HT 42**
A Numerical Solution to the Dynamic Load, Film Thickness, and Surface Temperatures in Spur Gears, Part I Analysis **MD 177**; Part II Results **MD 188**
Surface Temperatures in Sliding Systems—A Finite Element Analysis (80-C2/Lub-28) **L 90**
Surfactant Flooding
Enhanced Oil Recovery by Flooding With Dilute Aqueous Chemical Solutions **ERT 285**
Surge
Experimental and Theoretical Study of Surge in a Small Centrifugal Compressor (81-FE-1) **F 391**; (D) (AC) **F 395**
Suryanarayana, N. V. Temperature Variation in the Absorber Plate of an Air Heating Flat Plate Solar Collector (80-WA/Sol-2) **SE 153**
Suspensions
Guideway-Suspension Tradeoffs in Rail Vehicle Systems **DS 237**
Sussman, J. L. How Well Does Design Education Prepare People for Industry? (Ed) **MD 675**
Suzuki, M. Evaluation of Radiation Damage in Reactor Pressure Vessel Steel by Elastic-Plastic Fracture Mechanics **MT 276**; A New Parameter for Characterizing Corrosion Fatigue Crack Growth **MT 298**
Svard, C. D. Design Procedure and Application of Solar-Assisted Series Heat Pump Systems **SE 135**
Svanson, F. C. The Development and Testing of the Space Shuttle Reaction Control System (78-WA/Aero-20) **I 137**
Svoboda, J. V. Linear Fluid Resistance Using Switching Valves and a Tank **DS 352**
Sweet, L. M. Advances in Transportation Technology: 1981 (F) **DS 170**; Control Systems for Automotive Vehicle Fuel Economy: A Literature Review **DS 173**; Evaluation of Time-Duration Dependent Wheel Load Criteria for Wheelclimb Derailment (80-WA/DSC-21) **DS 219**
Swelling
The Significance of Electromechanical and Osmotic Forces in the Nonequilibrium Swelling Behavior of Articular Cartilage in Tension **BE 221**
Swept Wings
The Linear Instability Due to the Compressible Crossflow on a Swept Wing (D) (AC) **F 179**
Swim, W. B. Measurements of the Mean Flow Velocity and Velocity Fluctuations at the Exit of an FC Centrifugal Fan Rotor **P 393**
Swimming Pools
Solar-Assisted Heat Pump and Swimming Pool Synergy for Domestic Heating **SE 105**
Swirl
The Influence of Swirl on the Flow Characteristics of a Reciprocating Piston-Cylinder Assembly (D) (AC) **F 180, 181**
Swirling Flows
Vorticity Modeling of Blade Wakes behind Isolated Annular Blade-Rows: Induced Disturbances in Swirling Flows (80-GT-140) **P 279**
Swirling Inlet Flow
Optimum Strut-Configuration for Downstream Annular Diffusers With Variable Swirling Inlet Flow (81-FE-2) **F 294**
Switching Valves
Linear Fluid Resistance Using Switching Valves and a Tank **DS 352**
Symbols
Metallic Materials Specification Handbook (BR) **MT 347**
Symmetric Matrix
The Symmetric Eigenvalue Problem (BR) **AM 988**
Synfuel Projects
Oxygen Facilities for Synthetic Fuel Projects **I 409**
Synfuels
Engine Fuels From Biomass (81-DGP-4) **ERT 344**
Synthetic Fuels
Oxygen Facilities for Synthetic Fuel Projects **I 409**
Syred, N. Vortex Amplifiers for Pipeline Protection **DS 358**
System Mean Void Fraction
A Generalization of the System Mean Void Fraction Model for Transient Two-Phase Evaporating Flows **HT 81**
System Performance
Analysis of Linear Dynamic Systems (BR) **MD 262**
Szabo, B. A. Application of the Tearing-Mode Crack-Growth Instability Theory to a Cracked Pressure Vessel Nozzle **PVT 59**
Sze, Y. Further Studies of the Interface Boundary Conditions for Bolted Flanged Connections **PVT 240**
Szeri, A. Z. *(editor)* Tribology: Friction, Lubrication, and Wear (BR) **L 320**

T

Tabakoff, W. A New Approach for Erosion Prediction Due To Fly Ash (80-GT-96) **P 285**; A Study of the Viscous and Nonadiabatic Flow in Radial Turbines **P 481**
Tabor, B. J. Failure of Thin Film Lubrication—An

Expedient for the Characterization of Lubricants (80-C2/Lub-43) L 497; (D) L 501; (AC) L 502
Tabor, D. Friction—The Present State of Our Understanding L 169
Tachi, K. Frictional Properties of a Surface Covered With a Soft Metal Film—Part 1: Experiments on Friction Between a Single Protuberance and a Surface L 236
Taft, C. K. A Proportional Piezoelectric Electro-Fluidic Pneumatic Valve Design DS 361
Tait, R. J. Plane Elastic Waves Generated by Dynamical Loading Applied to Edge of Circular Hole (81-WA/APM-4) AM 577
Takahashi, H. Evaluation of Radiation Damage in Reactor Pressure Vessel Steel by Elastic-Plastic Fracture Mechanics MT 276; A New Parameter for Characterizing Corrosion Fatigue Crack Growth MT 298
Takahashi, R. K. Liquid Sheet Jet Experiments: Comparison With Linear Theory F 595; (D) F 603; (AC) F 604
Takao, S. Dense, Vertical Jets with Two Opposing Buoyancy Components HT 135
Takao, Y. Stress Field Due to a Cylindrical Inclusion With Constant Axial Eigenstrain in an Infinite Elastic Body AM 853
Take, N. The Effect of Nuclei on the Inception of Bubble and Sheet Cavitation on Axisymmetric Bodies F 557
Takebe, K. Structural Properties of Immature Canine Bone BE 232
Takegaki, M. A New Feedback Method for Dynamic Control of Manipulators DS 119
Takeuti, Y. Some Considerations on Thermal Shock Problems in a Plate AM 113; (Er) AM 686
Takeya, K. Outline of Plan for Advanced Reheat Gas Turbine (81-GT-28) P 772
Takezono, S. Fatigue Crack Growth Behavior of Explosively-Bonded Clad Steel Plates MT 36
Takita, K. Fatigue Crack Growth Behavior of Explosively-Bonded Clad Steel Plates MT 36
Tallian, T. E. Rolling Bearing Life Modifying Factors for Film Thickness, Surface Roughness, and Friction (80-C2/Lub-16) L 509; (D) L 516-518; (AC) L 519; Simplified Fatigue Life Analysis for Traction Drive Contacts (80-C2/DET-40) MD 430; (D) MD 438; (AC) MD 439
Tamiya, S. The Effect of Nuclei on the Inception of Bubble and Sheet Cavitation on Axisymmetric Bodies F 557
Tan, C. S. Vorticity Modeling of Blade Wakes behind Isolated Annular Blade-Rows: Induced Disturbances in Swirling Flows (80-GT-140) P 279
Tan, S. H. Effect of Wind-Tunnel Walls on the Drag of a Sphere F 461
Tanaka, E. Plastic Deformation Behavior of Mild Steel Along Orthogonal Trilinear Strain Trajectories in Three-Dimensional Vector Space of Strain Deviator MT 287
Tanaka, H. Effect of Knudsen Number on Dropwise Condensation (TN) HT 606
Tanaka, K. A Dislocation Model for Fatigue Crack Initiation (81-APM-3) AM 97
Tanaka, M. On the Steady State and Dynamic Performance Characteristics of Floating Ring Bearings (80-C2/Lub-17) L 389; (D) (AC) L 397
Tanaka, S. Effects of Hunting Gear Ratio Upon Surface Durability of Gear Teeth (80-C2/DET-35) MD 227
Tanaka, Y. Stochastic and Fuzzy Decision Problems in Three-Workpiece Lapping Process I 192

Tangent Track
Measurements and Observations on Wheelset Lateral Dynamics of Locomotives on Tangent Track DS 375

Tangential Compliance
The Role of Elastic Tangential Compliance in Oblique Impact (80-C2/Lub-22) L 74

Tangential Load
On an Elastic Theory of Friction (BN) AM 438
Tani, I. Instantaneous Pressure Distribution Around a Sphere in Unsteady Flow F 497
Tani, J. Dynamic Stability of Truncated Conical Shells Under Pulsating Torsion AM 391; Elastic Instability of a Heated Annular Plate Under Lateral Pressure AM 399

Tanks
Linear Fluid Resistance Using Switching Valves and a Tank DS 352
Tanthapanichakoon, W. A Stochastic Analysis of a Solar Heated and Cooled House SE 158
Tao, L. N. The Exact Solutions of Some Stefan Problems With Prescribed Heat Flux AM 732

Tapered-Roller Bearings
Performance of Computer-Optimized Tapered-Roller Bearings to 2.4 Million DN (80-C2/Lub-18) L 13
Tate, R. E. Mean Wind Loading on Parabolic-Trough Solar Collectors SE 313
Tau, T. L. Application of Hydroelastic Waves to the Removal of Small Gallstones BE 79
Taya, M. On Stiffness and Strength of an Aligned Short-Fiber Reinforced Composite Containing Fiber-End Cracks Under Uniaxial Applied Stress AM 381; Stress Field Due to a Cylindrical Inclusion With Constant Axial Eigenstrain in an Infinite Elastic Body AM 853
Taylor, D. L. Optimum Vibration Absorbers for Linear Damped Systems MD 908
Taylor, J. J. A Photographic Study of Cavitation in Jet Flow F 14

Tearing
Ductile Tearing Instability of a Center-Cracked Panel of an Elastic-Plastic Strain Hardening Material MT 46

Tearing-Mode Instability
Application of the Tearing-Mode Crack-Growth Instability Theory to a Cracked Pressure Vessel Nozzle PVT 59

Technical Briefs
Analysis of the Horizontal to Vertical Orientation of Deep Water Risers (80-Pet-67) ERT 106
An Anlaytical Solution for the Normal Load Carrying Capacity of Lightly Loaded Cylinders in Combined Rolling, Sliding and Normal Motion L 467
Approximate Elastic-Plastic Analysis of Intersecting Equal Diameter Cylindrical Shells PVT 111
Approximate Elastic Stresses in Pipe Junctions with Chamfer Corners PVT 107
Approximate Elastic Stresses in a Tee Branch Pipe Connection Under Internal Pressure PVT 104
A Comparison of Constitutive Relations Incorporating Strain-Rate Hardening MT 261
The Effect of Magnus Force on the Scale Deposition in Geothermal Systems ERT 352
Estimating Reachable Sets DS 420
Further Numerical Studies on Dynamic Circumferential Crack Propagation in a Large Pipe PVT 200
Helium Penetration in Evacuated Solar Collectors: Theory and Effect on Their Performance SE 175
On the Inverse of a Special Class of Bilinear Systems DS 103
Log-Mean Temperature-Difference Correction Factors for Passive Latent-Heat Storage Units SE 281
A Method of Analyzing the Three-Dimensional Stiffness Properties of the Intact Human Lumbar Spine BE 299
Mobility and Impedance Definitions for Plain Journal Bearings L 468
A Note on the Solution for Continuous Jet Penetration of Solids I 349
On One Analysis of Piercing by the Use of Flow Lines I 233
A One Dimensional Crystal With Nearest Neighbors Coupled Through Their Velocities DS 293
On the Physical Basis of Auerbach's Law MT 183
The Retained Elasticity of Elastic Under Fixation Agents BE 121
The Role of Rear Insulation in the Performance of Flat Plate Solar Collectors SE 282
Rotational Interference for Darrieus Rotors SE 173
Stress Analysis of Axisymmetric Rotating Disks MD 922
A Three-Dimensional Geometrically Nonlinear Analysis of Pipelaying in an Ocean Environment PVT 201
U.S. Contour Maps of Annual Energy Delivery by Flat Plate Collectors SE 360

Technical Notes
Applicability of the Bubble Flux Density Concept HT 175
Application of the P-1 Approximation to Radiative Heat Transfer in a Nongray Medium HT 182
Conduction Shape Factors for Certain Multi-Hole Prismatic Bars HT 821
Double Diffusive Instability in a Vertical Layer of a Porous Medium HT 179
The Effect of Crossflow at the Entrance on Heat Transfer Enhancement in Tubes HT 178
The Effects of Nonuniform Heat Transfer from an Annular Fin of Triangular Profile HT 184
Heat Transfer from a Cone Spinning in a Corotating Fluid HT 815
Laminar Free Convection Boundary Layer Heat Transfer over Non-Isothermal Surface HT 819
Optimum Cylindrical Pin Fin HT 814
Similarity Rule for Solidification Heat Transfer with Change in Volume HT 173
Tube Wall Temperatures of an Eccentrically Located Horizontal Tube within a Narrow Annulus with Tube Contact HT 186

Technology
Materials in World Perspective (BR) MT 78

Technology Transfer
Design Technology Committee Overview (Ed) MD 257
Dynamic System Response Technology Transfer Via Computer Modeling (80-C2/DET-80) MD 281
International Technology Transfer—Who Should Learn the Second Language? (80-C2/DET-83) MD 335
Technology Transfer in the Determination of Torgue Characteristics of R4A Ball Bearings at High Speeds With Radial Load (80-C2/DET-82) MD 264

Tee Branch Connection
Approximate Elastic Stresses in a Tee Branch Pipe Connection Under Internal Pressure (TB) PVT 104

Teeth
Friction Between High Speed Gear Coupling Teeth (80-C2/DET-5) MD 54

Teeth Surfaces
A Method of Local Synthesis of Gears Grounded on the Connections Between the Principal and Geodetic Curvatures of Surfaces (80-C2/DET-30) MD 114; (D) MD 125
Tekkaya, A. E. Complete Numerical Solution of the Axisymmetrical Deep-Drawing Problem (81-WA/Mat-1) MT 326

Temperature
A Design Approach for Correlating High Temperature Fatigue Crack Growth Over a Wide Range of Parameters MT 246

Temperature Gradients
An Investigation of Thermal Stratification in Horizontal Storage Tanks SE 286
Temperature Gradients Through EHD Films and Molecular Alignment Evidenced By Infrared Spectroscopy (80-C2/Lub-12) L 65

Temperature Measurement
Temperature and Pressure Measurement Techniques for an Advanced Turbine Test Facility P 468

Temperature Ranges
Mathematical Model for Design Conditions for Cooling Load Calculations (80-C2/DET-122) MD 328

Temperature Variation
Temperature Variation in the Absorber Plate of an Air Heating Flat Plate Solar Collector (80-WA/Sol-2) SE 153

Tempered Steel
Fracture Toughness of 4130 Quenched and Tempered Steel MT 55
Templeton, J. S., III Analysis for an Embedded Ice Pressure Sensor ERT 87
Tencer, A. F. The Role of Secondary Variables in the Measurement of the Mechanical Properties of the Lumbar Intervertebral Joint BE 129
Tennyson, R. C. Mode Interaction of Axially Stiffened Cylindrical Shells: Effects of Stringer Axial Stiffness, Torsional Rigidity, and Eccentricity (81-WA/APM-28) AM 915

Tensile Failure
Evaluation of Tensile Failure of Girth Weld Repair Grooves in Pipe Subjected to Offshore Laying Stresses (80-Pet-74) ERT 48

Tension
Creep of 2618 Aluminum Under Side-Steps of Tension and Torsion and Stress Reversal Predicted by a Viscous-Viscoelastic Model (81-APM-8) AM 47

The Reduction of Capstan Effectiveness by Cable Bending Resistance (80-WA/OCE-2) I 319

Ten-Year Retrospective

A Ten-Year Retrospective on This Journal (F) DS 1

Test Fluids

Some Effects of Using Water as a Test Fluid in Fuel Nozzle Spray Analysis (80-GT-90) P 118

Tevaarwerk, L. Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) MD 410; (D) MD 417; (AC) MD 420; A Simple Thermal Correction for Large Spin Traction Curves (80-C2/DET-60) MD 440; (D) MD 445; (AC) MD 446

Textile Machines

Determination of Balloon Surface in Textile Machines—A Finite Segment Approach I 424

Tezduyar, T. E. Finite Elements Based Upon Mindlin Plate Theory With Particular Reference to the Four-Node Bilinear Isoparametric Element AM 587

Theilacker, J. C. An Algorithm for Calculating Monthly-Average Radiation on Inclined Surfaces SE 29

Theocaris, P. S. Crack Arrest Modes of a Transverse Crack Going Through a Longitudinal Crack or a Hole MT 177

Theoller, M. Analysis Method for Both Internal Stresses and Microstructural Effect Under Pure Rolling Fatigue Conditions L 521

Theoreticians

Methods of Synthesis and Analysis for Hypoid Gear-Drives of "Formate" and "Helixform"—Part 1. Calculations For Machine Settings For Member Gear Manufacture of the Formate and Helixform Hypoid Gears (80-C2/DET-31) MD 83; Part 2. Machine Setting Calculations for the Pinions of Formate and Helixform Gears MD 89; Part 3. Analysis and Optimal Synthesis Methods For Mismatch Gearing and its Application For Hypoid Gears of "Formate" and "Helixform" (80-C2/DET-33) MD 102; (D) MD 110; (AC) MD 112

Thermal Behavior

Performance of Storage Walls with Highly Conductive Covering Plates and Connecting Fins SE 201

Thermal Conduction

Lubrication of a Melting Slider Under Nonisothermal Conditions L 436

Thermal Conductivities

Thermally Symmetric Nonlinear Heat Transfer in Solids HT 745

Thermal Conductivity

Effective Thermal Conductivity for Combined Radiation and Free Convection in an Optically Thick Heated Fluid Layer HT 114

Evaluation of Thermal Conductivity in Layered Vessels (82-PVP-1) PVT 307

An Iterative Boundary Integral Numerical Solution for General Steady Heat Conduction Problems HT 26

Microconvective Thermal Conductivity in Disperse Two-Phase Mixtures as Observed in a Low Velocity Couette Flow Experiment HT 47

Pulse-Decay Method for Measuring the Thermal Conductivity of Living Tissues BE 253

Thermal Convection

Thermal Convection at Low Rayleigh Number from Concentrated Sources in Porous Media (Er) HT 527

Thermal Correction

A Simple Thermal Correction for Large Spin Traction Curves (80-C2/DET-60) MD 440; (D) MD 445; (AC) MD 446

Thermal Deformation

Thermal Deformation in Frictionally Heated Systems (BR) L 164

Thermal Effects

Rheological and Thermal Effects in Lubricated E.H.D. Contacts L 526

Some Experiments on the Steady State Characteristics of a Cylindrical Fluid-Film Bearing Considering Thermal Effects (80-C2/Lub-34) L 107

Thermal Effects on Traction in EHD Lubrication L 533

Thermal Emittance

The Effect of Receiver Optical Properties on Solar Thermal Electric Systems SE 207

Thermal Energy

Analysis and Design of Efficient Absorbers for Low-Temperature Desiccant Air Conditioners SE 67

Construction and Startup Performance of the Miamisburg Salt-Gradient Solar Pond SE 11

Thermal Energy Storage

Thermal Energy Storage and Regeneration (BR) SE 178

Thermal Expansion

Thermal Expansion Accommodation in a Jet Engine Frame P 776

Transient Thermal Expansion of Solids During Inert Heating, Phase Change, and Surface Gasification (TN) HT 601

Thermal Field

An Analytical Solution for the Thermal Characteristics of Journal Bearings L 443

Creeping Viscous Flow Around a Heat-Generating Solid Sphere AM 239

Thermal Loads

Stress Analysis of O.D. Notched Thick-Walled Cylinders Subjected to Internal Pressure or Thermal Loads PVT 76

Thermal Performance

A Comparison of Thermal Performance of Two and Four Tube Pass Designs for Split Flow Shells HT 169

Design, Evaluation, and Testing of a Moderately Concentrating, Nontracking Solar Energy Collector SE 34

Effect of Corrugated Cover Directional Transmittance on the Thermal Performance of a Solar Collector SE 144

Simulation of Thermal Performance of Solar Collector Arrays (81-WA/Sol-1) SE 258

Some Fundamental Relationships for Tubular Heat Exchanger Thermal Performance HT 573

Uncertainty in Determining Thermal Performance of Liquid-Heating Flat-Plate Solar Collectors SE 126

Thermal Power Plants

The Effects of Regional Insolation Differences upon Advanced Solar Thermal Electric Power Plant Performance and Energy Costs (79-WA/Sol-1) SE 213

Thermal Properties

Approximate Solution to Neumann Problem for Soil Systems (80-Pet-14) ERT 76

Phase Change Around Insulated Buried Pipes: Quasi-Steady Method ERT 201

A Simple Model of Seasonal Sea Ice Growth (80-WA/HT-20) ERT 212

Thermal Protection

Influence of Mach Number and End Wall Cooling on Secondary Flows in a Straight Nozzle Cascade (80-GT-52) P 257; (D) P 263; (AC) P 264

Thermal Recovery

State-of-the-Art of Thermal Recovery Models ERT 296

Thermal Regenerators

Thermal Energy Storage and Regeneration (BR) SE 178

Use of Lead/Lag Approximations in Modeling Thermal Regenerator Systems DS 49

Thermal Shock

Some Considerations on Thermal Shock Problems in a Plate AM 113; (Er) AM 686

Thermal Storage

Thermal Storage Regenerator Parameters for Almost Constant Gas Discharge Temperature (TN) HT 604

Thermal Stratification

An Investigation of Thermal Stratification in Horizontal Storage Tanks SE 286

Thermal Stress Analysis

TRANS2A: An Unconditionally Stable Code for Thermal Transient Stress Analysis in Piping PVT 50

Thermal Stresses

Circular Saw Vibration Control by Induction of Thermal Membrane Stresses (80-WA/PROD-8) I 81

Thermal Stresses in Severe Environments (BR) AM 453

Thermocouple Problems

Unsteady Surface Element Method HT 759

Thermodynamic Analysis

A Single-Stage Ammonia/Water Absorption Cycle With Integrated Heat Exchange Components SE 42

Thermodynamic Effects

Correlations of Thermodynamic Effects for Developed Cavitation F 534

Thermodynamic Performance

The Thermodynamic Performance of Two Combined Cycle Power Plants Integrated with Two Coal Gasification Systems P 572

Thermodynamics

Compound Hybrid Geothermal-Fossil Power Plants: Thermodynamic Analysis and Site-Specific Applications P 797

Second Law Analysis and Synthesis of Solar Collector Systems SE 23

System Thermodynamics of Energy Conversion Plants for Geopressured Resources (80-Pet-31) ERT 166

Thermodynamics of a Hermetic Reciprocating Refrigeration Compressor With MCCT-Piston and Valve System (80-C2/DET-84) MD 310

On Thermodynamics and Kinetic Theory of Ideal Rubber Membranes AM 345

Thermoelastic Analysis

Thermal and Thermoelastic Analysis of Spheroidal Graphite Cast Iron and Light Alloy Pistons MD 895

Thermoelastic Contact

Stability of Thermoelastic Contact for the Aldo Model AM 555

Thermal Deformation in Frictionally Heated Systems (BR) L 164

Thermoelastic Phenomena

Thermoelastic and Dynamic Phenomena in Seals (80-C2/Lub-9) L 253

Thermoelasticity

Boundary Condition Independence in Coupled Thermoelasticity (BN) AM 974

Thermoelastoplastic Creep

Effect of the External Load on the Thermoelastoplastic Creep Deformation (BN) AM 429

Thermoelectric Power Generation

Heat-Exchanger Effectiveness in Thermoelectric Power Generation HT 693

Thermohaline Systems

Mixed Layer Development in a Double-Diffusive, Thermohaline System SE 351

Thermomechanical History

On the Savart-Masson Effect (BN) AM 426

Thermoplastic Gearing

Calculation of Contact Ratios for Plastic/Plastic or Plastic/Steel Spur Gear Pairs (80-C2/DET-105) MD 528

Thermosyphon Systems

Performance Characteristics of a Thermosyphon Solar Domestic Hot Water System SE 193

Thermosyphons

Experimental and Analytical Investigation of a Natural Circulation System with Parallel Loops HT 645

Thien, M. D. Design Nomographs of Compression Helical Springs for Predetermined Reliability Levels (80-C2/DET-85) MD 268

Thick Fluid Layer

Effective Thermal Conductivity for Combined Radiation and Free Convection in an Optically Thick Heated Fluid Layer HT 114

Thick Vessel

Test of Thick Vessel with a Flow in Residual Stress Field (79-PVP-29) PVT 85

Thickness Effects

Thickness Effects are Minor in the Energy-Release Rate Integral for Bent Plates Containing Elliptic Holes or Cracks AM 320

Thin Elastic Plates

Nonlinear Theory for Flexural Motions of Thin Elastic Plate—Part 1: Higher-Order Theory AM 377; Part 2: Boundary-Layer Theory Near the Edge AM 383

Thin Film Lubrication

Failure of Thin Film Lubrication—The Effect of Running-In on the Load Carrying Capacity of Thin-Film Lubricated Concentrated Contacts (80-C2/Lub-42) L 203; (D; (AC) L 209

Failure of Thin Film Lubricaton—An Expedient for the Characterization of Lubricants (80-C2/Lub-43) L 497; (D) L 501; (AC) L 502

Thin Films
Boundary Layer Studies on Highly Loaded Cascades using Heated Thin Films and a Traversing Probe (80-GT-137) **P 237**
Thin Shells
Application of the Semi-Loof Thin Shell Element to the Analysis of Aircraft Engine Structures **P 511**
Thin Walled Tubes
A State Variable Analysis of Inelastic Deformation of Thin Walled Tubes **MT 305**
Thomas, J. R., Jr. Helium Penetration in Evacuated Solar Collectors: Theory and Effect on Their Performance (TB) **SE 175**
Thomas, K. C. The Creep Rupture Properties of ASME SA 516 (Grade 55) Steel in the Range 426°C to 872°C **MT 253**
Thomas, L. C. An Integral Analysis for Heat Transfer in Turbulent Incompressible Boundary Layer Flow **HT 772**
Thomas, W. C. Simulation of Thermal Performance of Solar Collector Arrays (81-WA/Sol-1) **SE 258**
Thompkins, W. J., Jr. Comparison of Experimental and Computational Shock Structure in a Transonic Compressor Rotor (80-GT-81) **P 78**
Thompson, B. S. Variational Formulations for the Finite Element Analysis of Noise Radiation from High-Speed Machinery **I 385**
Thompson, D. Developments in Power Fluidics for Application in Nuclear Plant **DS 342**
Thompson, J. C. Further Studies of the Interface Boundary Conditions for Bolted Flanged Connections **PVT 240**
Thomsen, E. G. Flow Stresses of Prestrained Annealed OFHC Copper and SAE 1018 Steel **MT 188**
Thomsen, H. H. Flow Stresses of Prestrained Annealed OFHC Copper and SAE 1018 Steel **MT 188**
Three Bars
Theoretical and Experimental Investigation of Stress Waves at a Junction of Three Bars (81-APM-16) **AM 148**
Three-Dimensional Computations
Dynamic Analysis of Explosive-Metal Interaction in Three Dimensions **AM 30**
Three-Dimensional Flow
The Prediction of Three-Dimensional Discrete-Hole Cooling Processes—Part 2: Turbulent Flow **HT 141**
Three-Dimensional Kinematics
On the Principle of Transference in Three-Dimensional Kinematics (80-DET-88) **MD 652**
Three-Dimensional Rectangular Cracks
Stress-Intensity Factor for a Three-Dimensional Rectangular Crack **AM 309**
Three-Dimensional Space
A Finite Element Formulation for Fluid-Structure Interaction in Three-Dimensional Space **PVT 183**
Three-Mass System
Rotational Vibration With Backlash—Part 2 (80-C2/DET-61) **MD 387**
Three-Point Bending
Fracture Toughness of 4130 Quenched and Tempered Steel **MT 55**
Three Workpieces
Stochastic and Fuzzy Decision Problems in Three-Workpiece Lapping Process **I 192**
Thresher, R. W. Overview of Wind Energy Systems: Issues in Development and Application **SE 3**
Threshold Region
An Analysis of Grain Size and Yield Stress Effects on Stress at Fatigue Limit and Threshold Stress Intensity Factor **MT 229**
Thrombogenic Potential
On the Hemolytic and Thrombogenic Potential of Occluder Prosthetic Heart Valves From In-Vitro Measurements **BE 83**
Thrust Bearings
Analysis of a Hydrodynamic Thrust Bearing With Incomplete Film (80-C2/Lub-27) **L 355**; (D) **L 359, 360**; (AC) **L 360**
Centrifugal Effects in Thrust Bearings and Seals Under Laminar Conditions (80-C2/Lub-21) **L 126**
Design of Efficient Turbulent Thrust Bearings III. Self-Pressurized Design **L 459**
Design and Performance of Compliant Thrust Bearings With Spiral-Groove Membranes on Resilient Supports (80-C2/Lub-36) **L 373**; (D) **L 385, 386**; (AC) **L 386**
Dynamic Analysis of a Cantilever-Mounted Gas-Lubricated Thrust Bearing (80-C2/Lub-32) **L 157**
An Experimental Investigation of the Pressures at the Edge of a Gas Bearing Pocket **L 593**
Prediction of the Operating Temperature of Thrust Bearings (80-C2/Lub-30) **L 97**
On the Thrust Bearing Characteristics in Turbulent Flow **L 453**
Thrust Load
Minimum Load Requirements for the Prevention of Skidding in High Speed Thrust Loaded Ball Bearings (80-C2/Lub-3) **L 35**
Thrusters
The Development and Testing of the Space Shuttle Reaction Control System (78-WA/Aero-20) **I 137**
Tichy, J. A. An Analytical Solution for the Thermal Characteristics of Journal Bearings **L 443**; A Model of Lubrication Filtration (80-C2/Lub-20) **L 81**
Tiller, A. R. Pattern Factor Improvement in the F-100 Primary Combustion System (81-GT-25) **P 739**
Time-Dependent Behavior
Self-Consistent Determination of Time-Dependent Behavior of Metals (81-APM-11) **AM 41**
Time Duration
Evaluation of Time-Duration Dependent Wheel Load Criteria for Wheelclimb Derailment (80-WA/DSC-21) **DS 219**
Time Integration Method
On the Dynamic Simulation of Large Nonlinear Mechanical Systems. Part 1: An Overview of the Simulation Technique. Substructuring and Frequency Domain Considerations (80-DET-66) **MD 849**; Part 2: The Time Integration Technique and Time Response Loop (80-DET-67) **MD 857**
Time Response
Improved Statistical Linearization for Analysis and Control of Nonlinear Stochastic Systems—Part 1: An Extended Statistical Linearization Technique **DS 14**; Part 2: Application to Control System Design **DS 22**
Timoshenko Beam
Application of the Reissner Method to a Timoshenko Beam (BN) **AM 672**
Ting, T. C. T. Characteristic Forms of Differential Equations for Wave Propagation in Nonlinear Media (81-WA/APM-23) **AM 743**
Tip Clearance
On the Pressure Losses Due to the Tip Clearance of Centrifugal Blowers (80-GT-139) **P 271**
Tip Heat Transfer
Analytically Determined Fin-Tip Heat Transfer Coefficients **HT 18**
Tipei, N. *(reviewer)* Lagare Cu Alunecare (Sliding Bearings) (BR) **L 319**
(Recipient) Mayo D. Hersey Award **L 334**
Tippetts, J. R. Developments in Power Fluidics for Application in Nuclear Plant **DS 342**
Tippetts, T. B. Development of an Electrofluidic Rate Sensor **DS 303**
Titanium
A Statistical Investigation of Microstructure and Crack Growth in Titanium Alloys (80-GT-125) **P 180**
Titanium Alloy
The Rate (Time)-Dependent Behavior of Ti-7Al-2Cb-1Ta Titanium Alloy at Room Temperature Under Quasi-Static Monotonic and Cyclic Loading (81-APM-7) **AM 55**
Todd, C. J. One Viewpoint Concerning Unit Size in the Development of Wind Turbines **SE 306**
Toggle Action
Constrained Fatigue Life Optimization of a Nasvytis Multiroller Traction Drive (80-C2/DET-78) **MD 423**; (D) **MD 428**; (AC) **MD 429**
Tokis, J. N. Unsteady Hydromagnetic Flow Near a Moving Porous Plate **AM 255**
Tolerances
The Optimization Problem With Optimal Tolerance Assignment and Full Acceptance (80-DET-47) **MD 842**
Tomizuka, M. Application of Model Reference Adaptive Techniques to a Class of Nonlinear Systems **DS 158**
Tonnesen, J. Some Experiments on the Steady State Characteristics of a Cylindrical Fluid-Film Bearing Considering Thermal Effects (80-C2/Lub-34) **L 107**
Tool-Life
A Stochastic Tool-Life Model **I 126**
Tool Wear Sensing
Quantitative Relationships for Acoustic Emission from Orthogonal Metal Cutting **I 330**
Tools
Tooling Design for ECM—A Finite Element Approach (80-WA/Prod-9) **I 183**
Utility Operations: An Effective and Economic Approach to Operator Training (80-JPGC/Pwr-2) **P 348**
Tooth Bearing
Tooth Bearing Analysis and Surface Durability of Symmetrical Conformal Gears **MD 141**
Tooth Form
Rating Gear Strength (80-C2/DET-86) **MD 516**
Tooth Pair Compliance
Compliance and Stress Sensitivity of Spur Gear Teeth (80-C2/DET-24) **MD 447**
Tooth Profile
Bending Fatigue Tests of High Speed Spur Gears (80-C2/DET-87) **MD 466**
Calculation of Cylindrical Worm Gear Drives of Different Tooth Profiles (80-C2/DET-23) **MD 73**
Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) **MD 127**; (D) **MD 132**; (AC) **MD 133**
Tooth Surfaces
Ideal Spiral Bevel Gears—A New Approach to Surface Geometry (80-C2/DET-41) **MD 127**
Topological Meanings
Linkage Characteristic Polynominals: Definitions, Coefficients by Inspection (80-DET-8) **MD 578**
Topper, T. H. Fatigue Life Predictions of Smooth and Notched Specimens Based on Fracture Mechanics **MT 91**
Topper, T. N. Fatigue Life Predictions of Smooth Notched Specimens Based on Fracture Mechanics **MT 91**
Tordion, G. V. Numerical Implementation of Complex Potentials for Gear Tooth Stress Analysis (80-C2/DET-86) **MD 480**
Toren, M. Rotating Compressible Flow Over the Edge of a Finite Disk (81-APM-19) **AM 249**
Torque
Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) **MD 410**; (D) **MD 417**; (AC) **MD 420**
Parameter Instability of a Rotating Shaft Due to Pulsating Torque **AM 948**
Rotating Elasto-plastic Interference Fits (80-C2/DET-11) **MD 61**
Technology Transfer in the Determination of Torque Characteristics of R4A Ball Bearings at High Speeds With Radial Load (80-C2/DET-82) **MD 264**
Torque Characteristics of a 122-Centimeter Butterfly Valve With a Hydro/Pneumatic Actuator **F 396**
Torque Signals
Dynamic Analysis of Miling Machine by Torque Signals **I 235**
Torque Speed
The Nutating Traction Drive (80-GT-99) **P 154**
Torsion
Creep of 2618 Aluminum Under Side-Steps of Tension and Torsion and Stress Reversal Predicted by a Viscous-Viscoelastic Model (81-APM-8) **AM 47**
Dynamic Analysis of a Torsion Test Specimen Including Heat Conduction and Plastic Flow **MT 201**
Dynamic Stability of Truncated Conical Shells Under Pulsating Torsion **AM 391**
Torsion of Pretwisted Beams Due to Axial Loading (D) **AM 679**; (AC) **AM 680**
Transient Study of Couple Stress Effects in Compact Bone: Torsion **BE 275**
Torsional Rigidity
Mode Interaction of Axially Stiffened Cylindrical Shells: Effects of Stringer Axial Stiffness, Torsional Rigidity, and Eccentricity (81-WA/APM-28) **AM 915**
Tory, E. M. An Application of Mixture Theory to Particulate Sedimentation (D) (AC) **AM 210**
Torzilli, P. A. Structural Properties of Immature Canine Bone **BE 232**

Testeson, T. R. In Situ Biofouling of Ocean Thermal Energy Conversion (OTEC) Evaporator Tubes **SE 121**

Totani, T. A Mathematical Model of Hand Transfer Motion for Application to Manipulator Control **DS 152**

Towers
A Numerical Model for the Flow Within the Tower of a Tornado-Type Wind Energy System **SE 299**

Townsend, D. P. Analytical and Experimental Spur Gear Tooth Temperature as Affected by Operating Variables (80-C2/DET-34) **MD 219**; Endurance and Failure Characteristics of Modified Vasco X-2, CBS 600 and AISI 9310 Spur Gears (80-C2/DET-58) **MD 506**; (D) **MD 514**; (AC) **MD 514, 515**

Track Capacity
Train Brake and Track Capacity Requirements for the '80s (81-RT-11) **I 392**

Track Degradation
Laboratory Investigation of Wheel Rail Contact Stresses for U.S. Freight Cars (80-WA/RT-8) **I 246**

Traction
An Embedded Elliptical Crack, in an Infinite Solid, Subject to Arbitrary Crack-Face Tractions **AM 88**
Rheological and Thermal Effects in Lubricated E.H.D. Contacts **L 526**
Thermal Effects on Traction in EHD Lubrication **L 533**
On the Traction Behavior of Several Lubricants (80-C2/Lub-15) **L 55**

Traction Behavior
A Film Thickness Analysis for Line Contacts Under Pure Rolling Conditions With a Non-Newtonian Rheological Model (80-C2/Lub-26) **L 305**; (D) **L 313**; (AC) **L 314**

Traction Coefficient
Rolling Bearing Life Modifying Factors for Film Thickness, Surface Roughness, and Friction (80-C2/Lub-16) **L 509**; (D) **L 516-518**; (AC) **L 519**

Traction Curves
A Simple Thermal Correction for Large Spin Traction Curves (80-C2/DET-60) **MD 440**; (D) **MD 445**; (AC) **MD 446**

Traction Drives
Constrained Fatigue Life Optimization of a Nasuytis Multiroller Traction Drive (80-C2/DET-78) **MD 423**; (D) **MD 428**; (AC) **MD 429**
Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) **MD 410**; (D) **MD 417**; (AC) **MD 420**
The Nutating Traction Drive (80-GT-99) **P 154**
A Simple Thermal Correction for Large Spin Traction Curves (80-C2/DET-60) **MD 440**; (D) **MD 445**; (AC) **MD 446**
Simplified Fatigue Life Analysis for Traction Drive Contacts (80-C2/DET-40) **MD 430**; (D) **MD 438**; (AC) **MD 439**

Train Brakes
Train Brake and Track Capacity Requirements for the '80s (81-RT-11) **I 392**

Train Components
Kinematic Analysis of Spatial Mechanisms Using Train Components **MD 823**

Training
Utility Operations: An Effective and Economic Approach to Operator Training (80-JPGC/Pwr-2) **P 348**

Trains
The Effect of Cross-Winds on Trains **F 170**

Tran, H. T. Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: *P* and *SV* Motion (81-APM-18) **AM 155**

Transfer Drive
Roller Chain as a Transfer Drive for the Automobile **MD 19**

Transfer Functions
Space Sampling Effects in Nonlinear Distributed System Stability **DS 54**

Transference
On the Principle of Transference in Three-Dimensional Kinematics (80-DET-88) **MD 652**

Transfering Technology
Design Technology Committee Overview (Ed) **MD 257**

Transient Acoustic Waves
Nonlinear Response of an Elastic Cylindrical Shell to a Transient Acoustic Wave (81-APM-10) **AM 15**

Transient Cavitation
Transient Cavitation in Fluid-Structure Interactions (80-C2/PVP-23) **PVT 345**

Transient Conditions
A Cavitation Algorithm (80-C2/Lub-54) **L 350**; (D) (AC) **L 354**

Transient Creep
Creep Analysis (BR) **AM 451**

Transient Deformation
A Phenomenological Model for Transient Deformation Based on State Variables **MT 314**

Transient Heat Conduction
Unsteady Surface Element Method **HT 759**

Transient Inception
Prediction of Transient Inception of Boiling in Terms of a Heterogeneous Nucleation Theory (80-HT-113) **HT 69**

Transient Response
Transient Response of a Finite Crack in a Strip With Stress-Free Edges (D) **AM 681**; (AC) **AM 682**
Transient Response of a Latent Heat Storage Unit: An Analytical and Experimental Investigation **SE 275**

Transient Waves
Propagation of Elastic Pulses and Acoustic Emission in a Plate Part 1: Theory (81-APM-4) **AM 125**; Part 2: Epicentral Responses (81-APM-5) **AM 133**; Part 3: General Responses (81-APM-6) **AM 139**

Transition Temperature
The Effect of a Higher Loading Rate on the J_{Ic} Fracture Toughness Transition Temperature of HY Steels **MT 133**

Transmissions
Adaption of Continuously Variable Tansmissions to the Characteristic of a Driven Machine by Bicoupled Planetary Transmissions (80-C2/DET-92) **MD 41**
The Development of a Perbury Traction Transmission for Motor Car Applications (80-C2/DET-59) **MD 29**
Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) **MD 410**; (D) **MD 417**; (AC) **MD 420**
Hydrostatic Power Splitting Transmissions Design and Application Examples (80-GT-123) **P 168**
Kinematic Efficiency of Non-Circular Geared Transmissions **MD 170**
The Nutating Traction Drive (80-GT-99) **P 154**

Transonic Cascade Flow
Finite Element Methods for Transonic Blade-to-Blade Calculations in Turbomachines (81-GT-5) **P 665**

Transonic Compressor Rotors
Comparison of Experimental and Computational Shock Structure in a Transonic Compressor Rotor (80-GT-81) **P 78**

Transonic Flow
Computation of Supercritical Compressor and Turbine Cascades with a Design Method for Transonic Flows (D) (AC) **P 604**
The Linear Instability Due to the Compressible Crossflow on a Swept Wing (D) (AC) **F 179**
Transonic Flow Computations in Cascades Using Finite Element Method (81-GT-4) **P 657**

Transport
Prediction and Measurement of Mass, Heat, and Momentum Transport in a Nonreacting Turbulent Flow of a Jet in an Opposing Stream **F 127**

Transportation Technology
Advances in Transportation Technology: 1981 (F) **DS 170**

Transverse Cracks
Crack Arrest Modes of a Transverse Crack Going Through a Longitudinal Crack or a Hole **MT 177**

Transverse Direction
Instability of a Transversely Isotropic Elastic Slab Subjected to Axial Loads **AM 351**

Transverse Impingement
A Theoretical Model for the Transverse Impingement of Free Jets at Low Reynolds Number (D) (AC) **F 374**

Transverse Loading
Nonlinear Viscoelastic Analysis of a Unidirectional Composite Material (81-WA/APM-15) **AM 859**

Transverse Moment
Friction Between High Speed Gear Coupling Teeth **MD 54**; (D) **MD 59**; (AC) **MD 60**

Trapezoidal Enclosures
Natural Convection and Sidewall Losses in Trapezoidal Groove Collectors **SE 167**

Traveling Cavitation
Observations of the Various Types of Limited Cavitation on Axisymmetric Bodies **F 415**

Traveling Bubble Cavitation
Cavitation Inception Observations on Six Axisymmetric Headforms **F 273**; (D) (AC) **F 279**

Traversing Probe
Boundary Layer Studies on Highly Loaded Cascades using Heated Thin Films and a Traversing Probe (80-GT-137) **P 237**

Treadwell, G. W. An Analysis of the Influence of Geography and Weather on Parabolic Trough Solar Collector Design (80-C2/Sol-19) **SE 98**

Trezek, G. J. Biogasification of Municipal Solid Wastes **ERT 180**

Tribofailure
Effect of Molecular Weight Distribution of Mineral Oil on Tribofailure of Spur Gears **MD 210**

Tribological Behavior
Investigation Into the Influence of Dynamic Forces on the Tribological Behavior of Bodies in Rolling/Sliding Contact With Particular Regard to Surface Corrugations (80-C2/Lub-52) **L 26**

Tribology
The History of Tribology in America **L 323**
Lagare Cu Alunecare (Sliding Bearings) (BR) **L 319**
A Model of Lubrication Filtration (80-C2/Lub-20) **L 81**
Tribology: Friction, Lubrication, and Wear (BR) **L 320**

Tribology Group *(reviewers)* Lubrication Fundamentals (Mechanical Engineering Series, Vol. 3) (BR) **L 471**

Tricamo, S. J. A New Concept for Force Balancing Machines for Planar Linkages. Part 1: Theory (80-DET-73) **MD 637**; Part 2: Application to Four-Bar Linkage and Experiment (80-DET-74) **MD 784**

Trimble, L. C. Mini-OTEC Operational Results **SE 233**

Trochoidal Expanders
A Comparison Between Trochoidal, Rotary Vane and Reciprocating Expanders (80-C2/DET-81) **MD 304**

Trompette, P. An Improvement of the Stress Calculations in Plane Elasticity by Use of Spline Functions (BN) **AM 972**

Troughs
An Analysis of the Influence of Geography and Weather on Parabolic Trough Solar Collector Design (80-C2/Sol-19) **SE 98**

Trucks
Stability and Curving Mechanics of Rail Vehicles (80-WA/DSC-15) **DS 181**

True Efficiency
Efficiency of Wire Rope Terminations **MT 164**

Truncated Conical Shells
Dynamic Stability of Truncated Conical Shells Under Pulsating Torsion **AM 391**

Tsai, Y. C. Accessible Region and Synthesis of Robot Arms (80-DET-101) **MD 803**

Tsang, C. F. State-of-the-Art of Models for Geothermal Recovery Processes **ERT 291**

Tsao, M. C. C. Thermodynamics of a Hermetic Reciprocating Refrigeration Compressor With MCCT-Piston and Valve System (80-C2/DET-84) **MD 310**

Tso, J. Search for Large-Scale Coherent Structures in the Nearly Self-Preserving Region of a Turbulent Axisymmetric Jet **F 503**

Tsujino, T. A Photographic Study of Cavitation in Jet Flow (D) (AC) **F 371**

Tube Arrays
Flow Velocity Dependence of Damping in Tube Arrays Subjected to Liquid Cross-Flow **PVT 130**

Tube Bundles
Natural Convection Heat Transfer Between Cylindrical Tube Bundles and a Cubical Enclosure **HT 103**

Tube Pass
A Comparison of Thermal Performance of Two and Four Tube Pass Designs for Split Flow Shells **HT 169**

Tubes
Combined Free and Forced Convection in Vertical Tubes with Radial Internal Fins **HT 586**
Critical Heat Flux Experiments and Correlation in a Long, Sodium-Heated Tube **HT 74**
Drag Calculations for Vehicles in Very Long Tubes From Turbulent Flow Theory **F 381**
The Effect of Crossflow at the Entrance on Heat

Transfer Enhancement in Tubes (TN) **HT 178**
In Situ Biofouling of Ocean Thermal Energy Conversion (OTEC) Evaporator Tubes **SE 121**
Piercing of Cylindrical Tubes (80-C2/PVP-150) **PVT 255**
Pulse Propagation in Fluid-Filled Elastic Curved Tubes **PVT 43**
A State Variable Analysis of Inelastic Deformation of Thin Walled Tubes **MT 305**
Vibration in Nuclear Heat Exchangers Due to Liquid and Two-Phase Flow (80-C2/NE-4) **P 358**
Tucker, A. I. Constrained Fatigue Life Optimization of a Nasvytis Multiroller Traction Drive (80-C2/DET-78) **MD 423**; (D) **MD 428**; (AC) **MD 429**
Tuplin's Method
Calculating Natural Frequencies With Extended Tuplin's Method (80-C2/DET-48) **MD 379**
Turbine Blading
Effects of Free-Stream Turbulence Intensity and Frequency on Heat Transfer to Turbine Blading (80-GT-79) **P 60**
Long Arc Shrouding—A Reliability Improvement for Untuned Steam Turbine Blading (78-JPGC/Pwr-12) **P 522**; (D) **P 527, 528, 530**; (AC) **P 528, 529, 530**
Turbine Cascades
Computation of Supercritical Compressor and Turbine Cascades with a Design Method for Transonic Flows (D) (AC) **P 604**
An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large Scale Turbine Blade Cascade (D) (AC) **P 602**
Interferometric Measurements in a Turbine Cascade Using Image-Plane Holography (80-GT-91) **P 124**
Turbine Combustors
Preliminary Design Analysis of a Catalytic Ceramic Structure in a Turbine Combustor (78-WA/GT-10) **P 338**
Turbine Deposition
An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) **P 552**; (D) **P 558, 559**; (AC) **P 560**
Turbine Disks
Effects of Coolant Air Inlet Conditions on Turbulent Flow Between a Turbine Disk and its Casing (79-GT-35) **P 637**
Turbine Materials
Creep Rupture Behavior of Selected Turbine Materials in Air, Ultra-High Purity Helium, and Simulated Closed Cycle Brayton Helium Working Fluids (80-GT-173) **P 331**
Turbine Rotor Blades
Measurement of Turbine Rotor Blade Flows **P 400**
Turbines
Ammonia Turbine Design for Ocean Thermal Energy Conversion (OTEC) Plants **SE 92**
Efficiency Prediction for Axial-Flow Turbines Operating with Nonconventional Fluids (81-GT-15) **P 718**
A New Approach for Erosion Prediction Due To Fly Ash (80-GT-96) **P 265**
Temperature and Pressure Measurement Techniques for an Advanced Turbine Test Facility **P 468**
Turbofan Engines
Pattern Factor Improvement in the F-100 Primary Combustion System (81-GT-25) **P 739**
Turbojet Engines
Calculation of Windmilling Characteristics of Turbojet Engines (80-GT-50) **P 1**
Turbomachine Rotors
A Study of the Viscous and Nonadiabatic Flow in Radial Turbines **P 481**
Turbomachinery
Conventional Probes for the Relative Flow Measurement in a Turbomachinery Rotor Blade Passage **P 406**
Development of a Large-Scale Wind Tunnel for the Simulation of Turbomachinery Airfoil Boundary Layers (81-GT-6) **P 678**
Efficient Laser Anemometer for Intra-Rotor Flow Mapping in Turbomachinery **P 424**
Measurement Methods in Rotating Components of Turbomachinery **P 373**
Optical Advances in Laser Transit Anemometry **P 438**
Techniques for Aerodynamic and Turbulence Measurements in Turbomachinery Rotors **P 374**
Turbomachinery Design Considerations for the Nuclear HTGR-GT Power Plant (80-GT-80) **P 65**
Turbomachines
Experimental Analysis Methods for Unsteady Flows in Turbomachines **P 415**
Finite Element Methods for Transonic Blade-to-Blade Calculation in Turbomachines (81-GT-5) **P 665**
Nonaxisymmetric Blade Row Interaction in Axial Turbomachines (80-GT-133) **P 201**
The Third Two-Dimensional Problem of Three Dimensional Blade Systems of Hydraulic Machines (D) **F 483**
Turbomachines—A Guide to Design Selection and Theory (BR) **F 644**
Turbulence
Design of Efficient Turbulent Thrust Bearings III. Self-Pressurized Design **L 459**
Effects of Free-Stream Turbulence on Diffuser Performance (81-FE-4) **F 385**
Effects of Free-Stream Turbulence Intensity and Frequency on Heat Transfer to Turbine Blading (80-GT-79) **P 60**
A Method for the Calculation of 3D Boundary Layers on Practical Wing Configurations **F 104**
A Modified Form of the k-ϵ Model for Predicting Wall Turbulence **F 456**
The Prediction of Three-Dimensional Discrete-Hole Cooling Processes—Part 2: Turbulent Flow **HT 141**
Separation Efficiency of a Cyclone Separator with a Turbulence-Suppressing Rotating-Insert (80-IPC-Pwr-11) **P 566**
Structure and Decay Characteristics of Turbulence in the Near and Far-Wake of a Moderately Loaded Compressor Rotor-Blade (80-GT-95) **P 131**
A Study of Some Turbulence Models for Flow and Heat Transfer in Ducts of Annular Cross-Section **HT 146**
Techniques for Aerodynamic and Turbulence Measurements in Turbomachinery Rotors **P 374**
On the Thrust Bearing Characteristics in Trubulent Flow **L 453**
Turbulence in the Free Atmosphere (BR) **AM 988**
Turbulence Correlations
The Numerical Prediction of Developing Turbulent Flow in Rectangular Ducts **F 445**; (D) **F 454**; (AC) **F 455**
Turbulence Models
Calculation of Annular and Twin Parallel Jets Using Various Discretization Schemes and Turbulence-Model Variations **F 352**
Turbulent Boundary Layers
Application of the Method of Integral Relations to the Calculations of Two-Dimensional Incompressible Turbulent Boundary Layer **AM 701**
Heat Transfer in the Accelerated Fully Rough Turbulent Boundary Layer **HT 153**
An Integral Analysis for Heat Transfer in Turbulent Incompressible Boundary Layer Flow **HT 772**
Low-Reynolds-Number Turbulent Boundary Layers **F 624**
Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (80-WA/FE-9) **F 97**; (D) (AC) **F 372**
Turbulent Convection
Heat and Momentum Transfer in a Plane Turbulent Wall Jet **HT 138**
Turbulent Droplet Flow
Convective Heat Transfer to Turbulent Droplet Flow in Circular Tubes **HT 679**
Turbulent Flow
Analytic Prediction of the Friction Factor for Turbulent Flow in Internally Finned Channels **HT 423**
Complex Turbulent Flows: Comparison of Computation and Experiment **F 184**
Drag Calculations for Vehicles in Very Long Tubes From Turbulent Flow Theory **F 361**
Effect of Vessel Tapering on the Transition to Turbulent Flow: Implications in the Cardiovascular System **BE 116**
Effects of Coolant Air Inlet Conditions on Turbulent Flow Between a Turbine Disk and its Casing (79-GT-35) **P 637**
Injection and Mixing in Turbulent Flow (BR) **AM 988**
A New Probe for Measurement of Velocity and Wall Shear Stress in Unsteady, Reversing Flow **F 478**
The Numerical Prediction of Developing Turbulent Flow in Rectangular Ducts **F 445**; (D) **F 454**; (AC) **F 455**
Turbulent Flow Separation
REVIEW—A Review of Some Phenomena in Turbulent Flow Separation **F 520**
Turbulent Friction
An Improvement in the Calculation of Turbulent Friction in Smooth Concentric Annuli **F 615**
Turbulent Heat Transfer
Effect of Plenum Length and Diameter on Turbulent Heat Transfer in a Downstream Tube and on Plenum-Related Pressure Losses **HT 415**
Turbulent Pipe Flow
REVIEW: Turbulent Developing Pipe Flow **F 243**
Turbulent Plane Jet
The Apparent Flapping Motion of a Turbulent Plane Jet—Further Experimental Results (80-WA/FE-13) **F 119**; (D) (AC) **F 126**
Turbulent Shear Flows
Search for Large-Scale Coherent Structures in the Nearly Self-Preserving Region of a Turbulent Axisymmetric Jet **F 503**
Turbulent Shear Flows Over a Step Change in Surface Roughness **F 344**
Two-Dimensional Turbulent Offset Jet-Boundary Interaction **F 154**
Turbulent Wake
Wake Behavior in the Presence of Free Stream Turbulence **P 490**
Turning
A Data Dependent Systems Approach to Dynamics of Surface Generation in Turning **I 437**
In-Process Measurement of Surface Roughness in Turning by Laser Beams (80-WA/Prod-17) **I 203**
Turning Angles
Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (D) **P 603**; (AC) **P 603, 604**
Twin Parallel Jets
Calculation of Annular and Twin Parallel Jets Using Various Discretization Schemes and Turbulence-Model Variations **F 352**
Twisted Pipes
Steady Laminar Flow through Twisted Pipes. Fluid Flow in Square Tubes **HT 785**
Twisted Square Pipes
Steady Laminar Flow through Twisted Pipes. Heat Transfer in Square Tubes **HT 791**
Twisting
Bending and Twisting of Internally Pressurized Thin-Walled Cylinder With Creep (BN) **AM 439**
Two-Dimensional Performance
Two-Dimensional Performance Analysis and Design of MHD Channels **F 307**
Two-Dimensional Problems
A Finite-Element Singular-Perturbation Technique for Convection-Diffusion Problems—Part 1: The One-Dimensional Case **AM 265**; Part 2: Two-Dimensional Problems **AM 272**
The Third Two-Dimensional Problem of Three-Dimensional Blade Systems of Hydraulic Machines—Part 1: Theoretical Analysis **F 33**; Part 2: Analytical Results **F 42**
Two-Dimensional Turbulent Jets
Two-Dimensional Turbulent Offset Jet-Boundary Interaction **F 154**
Two-Phase Flow
A Generalization of the System Mean Void Fraction Model for Transient Two-Phase Evaporating Flows **HT 81**
A Hybrid Numerical Method for Homogeneous Equilibrium Two-Phase Flows in One Space Dimension (80-C2/PVP-51) **PVT 20**
Phase Distribution Mechanisms in Turbulent Two-Phase Flow in Channels of Arbitrary Cross Section **F 583**
Prediction of Gaseous Cavitation Occurrence in Various Liquids Based on Two-Phase Flow Analogy **F 551**
Vibration in Nuclear Heat Exchanges Due to Liquid and Two-Phase Flow (80-C2/NE-4) **P 358**
Tyner, C. E. Model Capabilities for In-Situ Oil Shale Recovery **ERT 138**

U

Uchiyama, Y. NO_x Removal Process by Injection of NH_3 and H_2O_2 in Gas Turbine Exhaust Gas **P 589**

Udell, K. S. Heat Transfer to Oil Shale in a Closely Spaced Bundle as an Approximation to a Packed Bed (79-WA/HT-34) **ERT 307;** Oil Shale Retorting in a Bottom-Burning Retort (79-HT-3) **ERT 119**

Uematsu, S. Effects of Moving Speeds of Dynamic Loads on the Deflections of Gear Teeth **MD 357**

Ueyama, H. Acoustic Emission Monitoring During Rupture Test of Pressure Vessel and Laboratory Fracture Test **PVT 191**

Uhl, W. C. *(author)* Europe's Offshore Oil & Gas (BR) **ERT 200**

Uicker, J. J., Jr. On the Dynamic Simulation of Large Nonlinear Mechanical Systems. Part 1: An Overview of the Simulation Technique. Substructuring and Frequency Domain Considerations (80-DET-66) **MD 849;** Part 2: The Time Integration Technique and Time Response Loop (80-DET-67) **MD 857**

Ultrafiltration

A One-Dimensional Model of Simultaneous Hemodialysis and Ultrafiltration With Highly Permeable Membranes **BE 261**

Ultrasonic Measurement

Ultrasonic Measurement of Orthotropic Elastic Constants of Bovine Femoral Bone **BE 67**

Unal, H. C. Density-Wave Oscillations in Sodium Heated Once-Through Steam Generator Tubes **HT 485**

Unbalanced Rotor

Acceleration of Unbalanced Rotor Through the Resonance of Supporting Structure (81-APM-24) **AM 419**

Uncertain Linear Systems

On the Efficacy of Nonlinear Control in Uncertain Linear Systems **DS 95**

Underground Coal Production

Continuous Miner Noise (80-WA/NC-4) **I 282**

Underground Mining

An Investigation of the Mechanics and Noise Associated with Coal Cutting (80-WA/NC-1) **I 257**

Unger, A. Parametric Instability of a Rotating Shaft Due to Pulsating Torque **AM 948**

Uniaxial Applied Stress

On Stiffness and Strength of an Aligned Short-Fiber Reinforced Composite Containing Fiber-End Cracks Under Uniaxial Applied Stress **AM 361**

Uniaxial Tension

Biomechanical and Neurological Response of the Spinal Cord of a Puppy to Uniaxial Tension (Er) **BE 279**

The Continuous Damage Theory of Brittle Materials. Part 1: General Theory **AM 809;** Part 2: Uniaxial and Plane Response Modes **AM 816**

Uniform Heat Flux

A Nondimensional Analysis of Boiling Dry a Vertical Channel with a Uniform Heat Flux **HT 667**

Uniform Prismatic Columns

On the Analysis of Uniform Prismatic Columns (80-C2/DET-113) **MD 274**

Uniform Wall Temperature

Steady Laminar Flow through Twisted Pipes. Heat Transfer in Square Tubes **HT 791**

Universal Similarity

Universal Similarity in the Wakes of Stationary and Vibrating Bluff Structures (80-WA/FE-4) **F 52**

Unloading Terminals

Field and Laboratory Studies for Evaluating Submarine Pipeline Frictional Resistance **ERT 250**

Unlubricated Metals

A Review of the Recent Literature on the Unlubricated Sliding Wear of Dissimilar Metals (81-WA/Mat-2) **MT 333**

Unstable Linear Systems

Stabilization of an Unstable Linear System by Parametric White Noise (BN) **AM 198**

Unsteady Flow

Experimental Analysis Methods for Unsteady Flows in Turbomachines **P 415**

Instantaneous Pressure Distribution Around a Sphere in Unsteady Flow **F 497**

Mechanics of Blood Flow **BE 102**

Unsteady Hydromagnetic Flow Near a Moving Porous Plate **AM 255**

Unsteady Surface Element

Unsteady Surface Element Method **HT 759**

Updike, D. P. Approximate Elastic-Plastic Analysis of Intersecting Equal Diameter Cylindrical Shells (TB) **PVT 111;** Approximate Elastic Stresses in Pipe Junctions with Chamfer Corners (TB) **PVT 107;** Approximate Elastic Stresses in a Tee Branch Pipe Connection Under Internal Pressure (TB) **PVT 104**

Upset Forging

A Semi-Empirical Solution to Upset Forging **I 478**

Urbach, H. B. Performance of Multiphase Boiling MHD Generator **P 582**

Utility Operations

Utility Operations: An Effective and Economic Approach to Operator Training (80-JPGC/Pwr-2) **P 348**

Uzkan, T. Effects of Coolant Air Inlet Conditions on Turbulent Flow Between a Turbine Disk and its Casing (79-GT-35) **P 637**

V

Valentin, R. A. Pressure Transient Analysis of Elbow-Pipe Experiments Using the PTA-2 Computer Code (80-C2/PVP-22) **PVT 33;** Transient Cavitation in Fluid-Structure Interactions (80-C2/PVP-23) **PVT 345**

Valenzuela, J. A. Modeling of a Rotary Dry Cooling Tower (80-HT-95) **HT 715**

Valves

Development of Affinity Relations for Modeling Characteristics of Check Valves (80-Pet-36) **ERT 196**

Thermodynamics of a Hermetic Reciprocating Refrigeration Compressor With MCCT-Piston and Valve System (80-C2/DET-84) **MD 310**

Van Buskirk, W. C. Ultrasonic Measurement of Orthotropic Elastic Constants of Bovine Femoral Bone **BE 67**

Vance, J. M. Rotordynamic Instability in Centrifugal Compressors—Are All the Excitations Understood? (80-GT-149) **P 288**

Van Den Berg, B. A Method for the Calculation of 3D Boundary Layers on Practical Wing Configurations **F 104**

van Heeuwen, H. Evaluation of a High Performance Fixed-Ratio Traction Drive (80-C2/DET-38) **MD 410;** (D) **MD 417;** (AC) **MD 420**

Van Wanderham, M. C. Gas Turbine Engine Disk Retirement-for-Cause: An Application of Fracture Mechanics and NDE (80-GT-127) **P 198**

Vapor

A Three-Dimensional Air-Vapor-Droplet Local Interaction Model for Spray Units **HT 514**

Vapor Bubbles

Bubble Growth During Decompression of a Liquid (79-HT-73) **HT 56**

Vapor Pressure

On the Equilibrium of Cavitation Nuclei in Liquid-Gas Solutions **F 425;** (D) (AC) **F 430**

Vardi, I. Design Improvements in LiBr Absorption Chillers for Solar Applications **SE 56**

Variable Parameters

Stability Theorems for Multidimensional Linear Systems With Variable Parameters **AM 174**

Variable Ratio Drives

Simplified Fatigue Life Analysis for Traction Drive Contacts (80-C2/DET-40) **MD 430;** (D) **MD 438;** (AC) **MD 439**

Variable Transmissions

Adaption of Continuously Variable Transmissions to the Characteristic of a Driven Machine by Bicoupled Planetary Transmissions (80-C2/DET-92) **MD 41**

Variation Rate

Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part I: Plain Milling With a Single-Toothed Helical Cutter (80-WA/Prod-4) **I 165;** Part II: Plain Milling with a Multi-Toothed Helical Cutter (80-WA/Prod-5) **I 174**

Variational Theorems

Variational Formulations for the Finite Element Analysis of Noise Radiation from High-Speed Machinery **I 385**

Varispeed Drives

Some Notes on V-belt Drives (80-C2/DET-91) **MD 8**

Varotta, R. Approximate Solution to Neumann Problem for Soil Systems (80-Pet-14) **ERT 76**

Vashi, K. M. Computation of Seismic Response from Higher Frequency Modes (80-C2/PVP-50) **PVT 16**

Vasseur, P. Transient Natural Convection Heat Transfer of Water with Maximum Density Effect and Supercooling (80-HT-74) **HT 528**

V-Belts

Some Notes on V-Belt Drives (80-C2/DET-91) **MD 8**

Vehicle Drag

Evaluation of Vehicle Drag Parameters From Coast-down Experiments Conducted Under Nonideal Environmental Conditions **F 133;** (D) **F 140;** (AC) **F 141**

Vehicle Dynamics

Advances in Transportation Technology: 1981 (F) **DS 170**

Vehicle Shapes

Wake Structure of Typical Automobile Shapes **F 162**

Vehicle Suspensions

Optimum Vehicle Suspensions Minimizing RMS Rattlespace, Sprung-Mass Acceleration and Jerk (81-WA/DSC-23) **DS 228;** (Er) **DS 351**

Vehicles

Nonstationary Reponse of Vehicles on Rough Ground—A State Space Approach **DS 245**

Vehicular Gas Turbines

Aerodynamic and Geometric Design Criteria for the Performance of Low Powered Vehicular Gas Turbines (80-GT-117) **P 158**

Velocity

The Effect of the Axial Velocity Density Ratio on the Aerodynamic Coefficients of Compressor Cascades (80-GT-134) **P 210**

Friction Between High Speed Gear Coupling Teeth **MD 54;** (D) **MD 58;** (AC) **MD 59**

Measurements of the Mean Flow Velocity and Velocity Fluctuations at the Exit of an FC Centrifugal Fan Rotor **P 393**

A New Probe for Measurement of Velocity and Wall Shear Stress in Unsteady, Reversing Flow **F 478**

A Round Jet Normal to a Crossflow (80-WA/FE-18) **F 142**

Two-Dimensional Performance Analysis and Design of MHD Channels **F 307**

Velocity Distribution

Developing Region of Laminar Jets With Parabolic Exit Velocity Profiles (81-FE-3) **F 322**

Velocity Field

Creeping Viscous Flow Around a Heat-Generating Solid Sphere **AM 239**

Velocity Field and Entrainment of a Pulsed Core Jet **F 605**

Velocity Profiles

Investigations of an Axial Compressor End-Wall Boundary Layer Prediction Method (80-GT-53) **P 20**

Low-Reynolds-Number Turbulent Boundary Layers **F 624**

REVIEW: Turbulent Developing Pipe Flow **F 243**

Venkatesh, A. A Finite Element Model for Elastic and Slip Response of Fusion Magnets (D) **PVT 127**

Venkateswarlu, K. On the Thrust Bearing Characteristics in Turbulent Flow **L 453**

Ventilation Air

Effects of Coolant Air Inlet Conditions on Turbulent Flow Between a Turbine Disk and its Casing (79-GT-35) **P 637**

Vent-Pipe Systems

The Effect of Bevel Angle on Safety Valve Vent-Pipe Systems **P 587**

Venuvinod, P. K. Some Investigations Into Machining With Driven Rotary Tools **I 469**

Verma, J. P. Free Vibration of Thin-Walled Open Section Beams With Unconstrained Damping Treatment **AM 189**

Versatile Mechanisms

Instantaneous Kinematics of Multiple-Degree-of-Freedom Motions (80-DET-53) **MD 608**

Vertebrates

The Retained Elasticity of Elastin Under Fixation Agents (TB) **BE 121**

Vertical Annulus
Developing Laminar Free Convection in an Open Ended Vertical Annulus with a Rotating Inner Cylinder **HT 552**
Vertical Channel
A Nondimensional Analysis of Boiling Dry a Vertical Channel with a Uniform Heat Flux **HT 687**
Vertical Condenser Tubes
Optimized Performance of Condensers with Outside Condensing Surfaces **HT 96**
Vertical Flat Plates
Reference Temperatures for Supercritical Laminar Free Convection on a Vertical Flat Plate **HT 613**
Vertical Jets
Dense, Vertical Jets with Two Opposing Buoyancy Components **HT 135**
Vertical Layers
Double Diffusive Instability in a Vertical Layer of a Porous Medium (TN) **HT 179**
Vertical Milling Machine
Dynamic Analysis of Milling Machine by Torque Signals **I 235**
Vertical Plates
Natural Convection Heat Transfer Coefficients for a Short Horizontal Cylinder Attached to a Vertical Plate **HT 630**
Vertical Separation
Effect of Vertical Separation Distance and Cylinder-to-Cylinder Temperature Imbalance on Natural Convection for a Pair of Horizontal Cylinders **HT 638**
Vertical Surfaces
The Influences of Property Variations on Natural Convection from Vertical Surfaces **HT 609**
Vesicles
Vesicle Transport in Arterial Endothelium and the Influence of Mechanical Factors on Macromolecular Permeability **BE 186**
Vessel Designs
Recent Advances in the ASME Section VIII Division 1 and 2 Pressure Vessel Codes **PVT 119**
Vessel Tapering
Effect of Vessel Tapering on the Transition to Turbulent Flow: Implications in the Cardiovascular System **BE 116**
Vibrating Beams
The Vibrating Beam With Nonhomogeneous Boundary Conditions (BN) **AM 669**
Vibrating Compliant Bearings
Rubber Surface Squeeze Film (80-C2/Lub-33) **L 398**; (D) (AC) **L 404**
Vibration
Active Vibration Control of a Flexible Rotor on Flexibly-Mounted Journal Bearings (81-WA/DSC-5) **DS 383**
Added Mass and Hydrodynamic Damping of Perforated Plates Vibrating in Water **PVT 175**
Amplitude Incremental Variational Principle for Nonlinear Vibration of Elastic Systems (81-WA/APM-26) **AM 959**
An Analysis of Mechanical Face Seal Vibrations (80-C2/Lub-8) **L 428**; (D) (AC) **L 434**
On Circular Pipe Wall Vibratory Response Excited by Internal Acoustic Fields (80-WA/NC-13) **I 372**
The Effect of Aerodynamic Phase Lag on the Twin Vibration Mode Model of Aeroengine Fan Flutter (80-GT-166) **P 313**
Experiments on the Vibration Characteristics of a Rotor With Flexible, Damped Support (80-GT-124) **P 174**
Fan/Foundation Interaction—A Simplified Calculation Procedure **P 805**
Free Vibration of a Beam Supproted by Unsymmetrical Spring Hinges (Er) **AM 449**
Free Vibration of Thin-Walled Open Section Beams With Unconstrained Damping Treatment **AM 169**
Generation of Squeal/Chatter in Water-Lubricated Elastomeric Bearings (80-C2/Lub-45) **L 406**; (D) (AC) **L 413**
Pendulum With a Rotational Vibration (BN) **AM 200**
On Predicting Vibrations in Realistically Proportional Linkage Mechanisms (80-DET-4) **MD 706**
Redesign of Structural Vibration Modes by Finite-Element Inverse Perturbation (80-GT-167) **P 319**
Residual Vibration Criteria Applied to Multiple Degree of Freedom Cam Followers (80-DET-3) **MD 702**
Rotational Vibration with Backlash—Part 2 (80-C2/DET-61) **MD 387**
Transverse Vibrations of Beams, Exact Versus Approximate Solution **AM 923**
Vibration of an Elastic Circular Plate on an Elastic Half Space—A Direct Approach **AM 161**
The Vibration Isolating Properties of Uncentralized Squeeze-Film Damper Bearings Supporting a Flexible Rotor **P 781**
Vibration in Nuclear Heat Exchanger Due to Liquid and Two-Phase Flow (80-C2/NE-4) **P 358**
Vibration of Thick Rectangular Plates of Bimodulus Composite Material (81-APM-28) **AM 371**
Vibrations of Free Circular Plates Having Elastic Constraints and Added Mass Distributed Along Edge Segments (BN) **AM 196**
Vibrations of Long Marine Pipes due to Vortex Shedding (81-Pet-29) **ERT 231**; (Er) **ERT 290**
Vibrations of Square and Hexagonal Cylinders in a Liquid **PVT 233**
Vibration Absorbers
Optimum Vibration Absorbers for Linear Damped Systems **MD 908**
Vibration Technology
An International Survey of Shock and Vibration Technology (BR) **MD 685**
Vibratory Feeders
Study on Vibratory Feeders: Calculation of Natural Frequency of Bowl-Type Vibratory Feeders **MD 249**
Vick, B. Effects of Axial Conduction and Convective Boundary Conditions in Slug Flow Inside a Circular Tube **HT 436**; Quasi-Steady-State Temperature Distribution in Periodically Contacting Finite Regions **HT 739**
Victor, F. Acceleration of Unbalanced Rotor Through the Resonance of Supporting Structure (81-APM-24) **AM 419**
Viersma, T. J. *(author)* Analysis, Synthesis and Design of Hydraulic Servosystems and Pipelines (BR) **DS 73**
Vijayakumar, K. An Embedded Elliptical Crack, in an Infinite Solid, Subject to Arbitrary Crack-Face Tractions **AM 88**
Viktorov, G. V. The Third Two-Dimensional Problem of Three-Dimensional Blade Systems of Hydraulic Machines—Part 1: Theoretical Analysis **F 33**; Part 2: Analytical Results **F 42**
Vincent, R. Q. Vibration in Nuclear Heat Exchange Due to Liquid and Two-Phase Flow (80-C2/NE-4) **P 358**
Vincent, S. P. Ammonia Turbine Design for Ocean Thermal Energy Conversion (OTEC) Plants **SE 92**
Vinnichenko, N. K. *(author)* Turbulence in the Free Atmosphere (BR) **AM 988**
Vira, N. R. Heat Transfer from a Cone Spinning in a Corotating Fluid (TN) **HT 815**
Virgin Specimens
Measuring the Actual Endurance Limit of One Specimen Using a Nondestructive Method **MT 71**
Viscoelastic Analysis
Nonlinear Viscoelastic Analysis of a Unidirectional Composite Material (81-WA/APM-15) **AM 859**
Viscoelastic Analysis of Adhesively Bonded Joints **AM 331**
Viscoelastic Properties
The Time and History-Dependent Viscoelastic Properties of the Canine Medial Collateral Ligament **BE 293**
Viscoelastic Responses
Viscoelastic Responses of Finite Bodies by Quadrature Form of Correspondence Principle (BN) **AM 206**
Viscoelasticity
A Nonlinear Theory of Viscoelasticity for Application to Elastomers (D) **AM 682**; (AC) **AM 683**
Rubber Surface Squeeze Film (80-C2/Lub-33) **L 398**; (D) (AC) **L 404**
Viscoplastic Material
Arrest of Mode III Fast Fracture by a Transition From Elastic to Viscoplastic Material Properties **AM 509**
Viscoplasticity
Endochronic Description of Cyclic Hardening Behavior for Metallic Materials **MT 212**
A Theory of Multiaxial Anisotropic Viscoeplasticity (81-APM-21) **AM 276**
Viscous Couplant
Scattering of Rayleigh Waves by a Plate Attached to a Half Space Through a Viscous Couplant (81-WA/APM-24) **AM 881**
Viscous Dissipation
Lubrication of a Melting Slider Under Nonisothermal Conditions **L 436**
Viscous-Dominated Transition
Transient Fluid Flow in Porous Media: Inertia-Dominated to Viscous-Dominated Transition **F 339**
Viscous Effects
Viscous Effects in the Inception of Cavitation **F 280**
Viscous Flow
Calculations of Three-Dimensional Viscous Flow and Wake Development in a Centrifugal Impeller **P 367**
A Note on the Effect of Short and Long Laminar Separation Bubbles on Desinent Cavitation **F 28**
A Study of the Viscous and Nonadiabatic Flow in Radial Turbines **P 481**
Viscous Flow Drag Reduction (BR) **F 485**
Viscous Fluids
Similarity Solutions to the Nonisothermal, Two-Dimensional Squeezing Flow of a Viscous Fluid (BN) **AM 670**
On the Stokes Flow of Viscous Fluids Through Corrugated Pipes (Er) **AM 454**
Viscous Materials
An Analysis of Power Law Viscous Materials Under a Plane-Strain Condition Using Complex Stream and Stress Functions (81-WA/APM-1) **AM 486**
Viskanta, R. Heat Transfer and Interface Motion During Melting and Solidification around a Finned Heat Source/Sink (80-HT-10) **HT 720**; Mixed Layer Development in a Double-Diffusive, Thermohaline System **SE 351**
Viswanathan, R. Materials for Generator Retaining Rings **MT 267**
Vliet, G. C. Transient Response of a Latent Heat Storage Unit: An Analytical and Experimental Investigation **SE 275**
Vohr, J. H. Prediction of the Operating Temperature of Thrust Bearings (80-C2/Lub-30) **L 97**
Volatile Liquids
Cooling of Freely Falling Liquid Drops with a Shell of an Immiscible Volatile Liquid **HT 508**
Volin, R. H. *(author)* An International Survey of Shock and Vibration Technology (BR) **MD 685**
Volterra Expansion
Volterra Series Expansion for Bilinear Systems in a Nonlinear Feedback Loop **DS 84**
Vortex Amplifiers
Vortex Amplifiers for Pipeline Protection **DS 358**
Vortex Cavitation
The Effect of Secondary Vorticity on the Inception of Vortex Cavitation **F 19**
Vortex Controlled Diffusers
The Hybrid Diffuser (80-GT-136) **P 229**
Vortex Induced Combustion
The CIVIC—A Concept in Vortex Induced Combustion, Part II (81-GT-12) **P 708**
Vortex Shedding
On the Acoustical Implications of Vortex Shedding from an Exhaust Pipe (80-WA/NC-16) **I 378**
Dynamic Response of a Cantilever Pile to Vortex Shedding in Regular Waves **ERT 32**
Pressure and Vortex Shedding Patterns Around a Low Aspect Ratio Cylinder in a Sheared Flow at Transcritical Reynolds Numbers (D) **F 373**; (AC) **F 374**
Pressure and Vortex Shedding Patterns Around a Low Aspect Ratio Cylinder in a Sheared Flow at Transitional Reynolds Numbers **F 88**; (D) **F 95**; (AC) **F 96**
Vibrations of Long Marine Pipes due to Vortex Shedding (81-Pet-29) **ERT 231**; (Er) **ERT 290**
Vortex Structures
Tilting, Stretching, Pairing and Collapse of Vortex Structures in Confined Counter-Current Flow (80-WA/FE-11) **F 486**
Vortex Valves
Flood Protection by Vortex Valves **DS 338**
Vorticity
The Effect of Secondary Vorticity on the Inception of Vortex Cavitation **F 19**
Vorticity Modeling of Blade Wakes behind Isolated

Annular Blade-Rows: Induced Disturbances in Swirling Flows (80-GT-140) P 279
Vukobratovic, M. One Engineering Concept of Dynamic Control of Manipulators DS 108
Vullo, V. Thermal and Thermoelastic Analysis of Spheroidal Graphite Cast Iron and Light Alloy Pistons MD 895

W

Wake
Calculations of Three-Dimensional Viscous Flow and Wake Development in a Centrifugal Impeller P 367
Nonaxisymmetric Blade Row Interaction in Axial Turbomachines (80-GT-133) P 201
Structure and Decay Characteristics of Turbulence in the Near and Far-Wake of a Moderately Loaded Compressor Rotor-Blade (80-GT-95) P 131
Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Element (D) (AC) F 372
Universal Similarity in the Wakes of Stationary and Vibrating Bluff Structures (80-WA/FE-4) F 52
Wake Induced Time-Variant Aerodynamics Including Rotor-Stator Axial Spacing Effects F 59
Wake Structure of Typical Automobile Shapes F 162
Wake Behavior
Wake Behavior in the Presence of Free Stream Turbulence P 490
Waksman, D. Uncertainty in Determining Thermal Performance of Liquid-Heating Flat-Plate Solar Collectors SE 127
Walburn, F. J. Effect of Vessel Tapering on the Transition to Turbulent Flow: Implications in the Cardiovascular System BE 116; Flow Visualization in a Mold of an Atherosclerotic Human Abdominal Aorta BE 168
Waldron, K. J. Implementation of Solution Rectification Techniques in an Interactive Linkage Synthesis Program (80-DET-91) MD 657; The Workspaces of a Mechanical Manipulator (80-DET-107) MD 665
Waldron, W. D. Dynamic Characteristics of a High-Speed Rotor With Radial and Axial Foil-Bearing Supports (80-C2/Lub-35) L 361; (D) L 370, 371, (AC) L 371
Walker, J. A. *(author)* Dynamical Systems and Evolution Equations: Theory and Applications (BR) AM 450
Wall Jets
Heat and Momentum Transfer in a Plane Turbulent Wall Jet HT 138
Wall Roughness
Turbulent Boundary Layer Flow Through a Gap in a Wall Mounted Roughness Elements (80-WA/FE-9) F 97
Wall Shear Stress
A New Probe for Measurement of Velocity and Wall Shear Stress in Unsteady, Reversing Flow F 478
Wall Turbulence
A Modified Form of the k-ε Model for Predicting Wall Turbulence F 456
Walters, L. C. EBR-II Metallic Driver Fuel—A Live Option (80-C2/NE-23) P 612
Walters, W. P. A Note on the Solution for Continuous Jet Penetration of Solids (TB) I 349
Wang, C. C. Calculating Natural Frequencies With Extended Tuplin's Method (80-C2/DET-48) MD 379; Rotational Vibration With Backlash—Part 2 (80-C2/DET-61) MD 387
Wang, C.-Y. Basic Transport Equations in Ascending Equiangular Spiral Polar Coordinates (D) AM 985; Equilibrium of Heavy Elastic Cylindrical Shells AM 582; Folding of Elastica-Similarity Solutions (BN) AM 199; Stability of a Heavy Column With an End Load (BN) AM 688
Wang, J. S. Y. State-of-the-Art of Models for Geothermal Recovery Processes ERT 291
Wang, K. L. A Numerical Solution to the Dynamic Load, Film Thickness, and Surface Temperatures in Spur Gears, Part I Analysis MD 177; Part II Results MD 188
Wang, P. K. C. *(reviewer)* New Approaches to Nonlinear Problems in Dynamics (BR) AM 453
Ward, R. N. Ultrasonic Measurement of Orthotropic Elastic Constants of Bovine Femoral Bone BE 67
Warinner, D. K. Fluid-Inertia Effects in Radial Flow Between Oscillating, Rotating Parallel Disks (80-C2/Lub-48) L 144
Warren, W. E. Packer-Induced Stresses During Hydraulic Well Fracturing ERT 336
Warrington, R. O., Jr. Natural Convection Heat Transfer Between Cylindrical Tube Bundles and a Cubical Enclosure HT 103
Watanabe, K. A Diagnosis Method for Linear Stochastic Systems With Parametric Failures DS 28; A Discrete-Time Adaptive Filter for Stochastic Distributed Parameter Systems DS 266
Watanabe, M. Tooth Bearing Analysis and Surface Durability of Symmetrical Conformal Gears MD 141
Watanabe, Y. An Investigation Into the Performance of Two Inlet Nozzles for Flow Measurement F 67; (D) (AC) F 73
Water
Fluid Flow Through a Class of Highly-Deformable Porous Media Part I: Experiments With Air F 432; (D) F 438; (AC) F 439; Part II: Experiments With Water F 440
Some Effects of Using Water as a Test Fluid in Fuel Nozzle Spray Analysis (80-GT-90) P 118
Transient Natural Convection Heat Transfer of Water with Maximum Density Effect and Supercooling (80-HT-74) HT 528
Water-Cooled Turbines
Water-Cooled Gas Turbine Monometallic Nozzle Development (80-GT-97) P 141
Water Environment
Low Cycle Fatigue of Commercial Piping Steels in a BWR Primary Water Environment MT 15
Water Flow Rates
Mathematical Formulation of Cooling Water Flow Rates for High Speed Continuous Slab Caster (80-C2/DET-111) MD 318
Water Hammer Impulse
Piping Response to Steam-Generated Water Hammer PVT 219
Water Holdup
Experimental Study of Oil-Water Flow in Inclined Pipes (80-Pet-51) ERT 56
Water Jets
Jet Piercing of Oil Sands ERT 330
A Note on the Solution for Continuous Jet Penetration (TB) I 349
Water-Lubricated Bearings
Generation of Squeal/Chatter in Water-Lubricated Elastomeric Bearings (80-C2/Lub-45) L 406; (D) (AC) L 413
Water Tempering
Water Tempered Cleaning Medium for Soot-blowers P 561
Water Waves
Note on a Paper by Liu on the Scattering of Water Waves by a Pair of Semi-Infinite Barriers (BN) AM 556
Watson, E. H. Thoughts on a Code of Practice for Forged High-Pressure Vessels of Monobloc Design PVT 2
Watson, L. T. Equilibrium of Heavy Elastic Cylindrical Shells AM 582
Watson, R. D. Velocity Field and Entrainment of a Pulsed Core Jet F 605
Wave Interference
Analytical Modeling of Wave Interference Directional Microphones (80-WA/NC-6) I 361
Wave Length
Dynamic Response of a Cantilever Pile to Vortex Shedding in Regular Waves ERT 32
Wave Propagation
Characteristic Forms of Differential Equations for Wave Propagation in Nonlinear Media (81-WA/APM-23) AM 743
Waves
Dynamic Response of a Double Articulated Offshore Loading Structure to Noncollinear Waves and Current (80-Pet-58) ERT 41
On the Irrotational Flow Around a Horizontal Cylinder in Waves (81-WA/APM-18) AM 689
Nonlinear Response of an Elastic Cylindrical Shell to a Transient Acoustic Wave (81-APM-10) AM 15
Propagation of Elastic Pulses and Acoustic Emission in a Plate Part 1: Theory (81-APM-4) AM 125; Part 2: Epicentral Responses (81-APM-5) AM 133; Part 3: General Responses (81-APM-6) AM 139
Waviness
Hydrodynamic Lubrication in Wavy Contacting Face Seals—A Two Dimensional Model (80-C2/Lub-10) L 578; (D) (AC) L 586
Thermoelastic and Dynamic Phenomena in Seals (80-C2/Lub-9) L 253
Weak Discontinuities
On the Propagation of Weak Discontinuities Along Bicharacteristics in a Radiating Gas AM 737
Weak Friction
An Educational Elasticity Problem With Friction. Part 1: Loading, and Unloading for Weak Friction (81-WA/APM-19) AM 841
Wear
The Behavior of Adhered Fragments Interposed Between Sliding Surfaces and the Formation Process of Wear Particles L 195
An Experimental Investigation of the Effect of Lubricant Properties on Temperature and Wear in Sliding Concentrated Contacts (80-C2/Lub-1) L 261
Fracture and Wear of Diamond Cutting Tools (81-WA/Mat-3) MT 341
Friction and Wear Results From Sputter-Deposited Chrome Oxide With and Without Nichrome Metallic Binders and Interlayers (80-C2/Lub-49) L 218
Some Factors Influencing the Pitting, Micro-Pitting (Frosted Areas) and Slow Speed Wear of Surface Hardened Gears (80-C2/DET-89) MD 499
Tribology: Friction, Lubrication, and Wear (BR) L 320
The Wear Coefficient—Magnitude, Scatter, Uses (80-C2/Lub-4) L 188; (D) L 193; (AC) L 194
The Wear of a Chromium Carbide Hard Facing: The Effect of High Gas Pressure on Wear Transitions (80-C2/Lub-5) L 228
The Wear of Polymers Sliding on Polymeric Films Deposited on Rough Surfaces (80-C2/Lub-24) L 266
Weather
An Analysis of the Influence of Geography and Weather on Parabolic Trough Solar Collector Design (80-C2/Sol-19) SE 98
Webb, R. L. Analytic Prediction of the Friction Factor for Turbulent Flow in Internally Finned Channels HT 423
Weber, R. C. Effects of Subject Position on Balance Platform Measurements (TB) BE 213
Webster, W. D., Jr. An Isoparametric Finite Element With Nodal Derivatives (81-APM-1) AM 64
Wedekind, G. L. A Generalization of the System Mean Void Fraction Model for Transient Two-Phase Evaporating Flows HT 81
Wedeven, L. D. An Experimental Evaluation of the Hamrock and Dowson Minimum Film Thickness Equation for Fully Flooded EHD Point Contacts (80-C2/Lub-38) L 284; (D) L 294
Wedges
Note on the Energy-Release Rate for a Crack Starting From the Apex of a Wedge (BN) AM 194
Wehage, R. Design Sensitivity Analysis of Planar Mechanism and Machine Dynamics (80-DET-6) MD 560
Weimer, F. C. Modeling of Nonholonomic Dynamic Systems With Applications (81-APM-12) AM 177
Weinbaum, S. Diffusion of Macromolecules Across the Arterial Wall in the Presence of Multiple Endothelial Injuries BE 197; A Three-Dimensional Air-Vapor Droplet Local Interaction Model for Spray Units HT 514; Vesicle Transport in Arterial Endothelium and the Influence of Mechanical Factors on Macromolecular Permeability BE 186
Weir, D. S. Correlations of Thermodynamic Effects for Developed Cavitation F 534
Weiss, T. Some Factors Influencing the Pitting, Micro-Pitting (Frosted Areas) and Slow Speed Wear of Surface Hardened Gears (80-C2/DET-89) MD 499
Welch, W. P. Long Arc Shrouding—A Reliability Improvement for Untuned Steam Turbine Blading (78-JPGC/Pwr-12) P 522; (D) P 527, 528, 530; (AC) P 528, 529, 530

Weld Repair
An Analytical Assessment of the Effects of Residual Stresses and Fracture Properties on Service Performance of Various Weld Repair Processes **PVT 373**
Welded Pipes
A Computational Model of Backlay Welding for Controlling Residual Stresses in Welded Pipes **PVT 226**
Welded Structures
Fatigue of Welded Structures (BR) **MT 185**
Welding
Long Arc Shrouding—A Reliability Improvement for Untuned Steam Turbine Blading (78-JPGC/Pwr-12) **P 522**; (D) **P 527, 528, 530**; (AC) **P 528, 529, 530**
Welding Research
Pressure Vessel Research Committee **PVT 388**
Well Bore Stresses
Packer-Induced Stresses During Hydraulic Well Fracturing **ERT 336**
Well Simulator
Modeling of Hydraulically Fractured Gas Wells Completed in Noncontinuous Lenticular Formations **ERT 153**
Wellford, L. C., Jr. A Finite-Element Singular-Perturbation Technique for Convection-Diffusion Problems—Part 1: The One-Dimensional Case **AM 265**; Part 2: Two-Dimensional Problems **AM 272**
Weng, G. J. Self-Consistent Determination of Time-Dependent Behavior of Metals (81-APM-11) **AM 41**; A Self-Consistent Scheme for the Relaxation Behavior of Metals (81-WA/APM-14) **AM 779**
Wenglarz, R. A. An Assessment of Deposition in PFBC Power Plant Turbines (80-WA/CD-1) **P 552**; (D) **P 558, 559**; (AC) **P 560**
Wesner, J. W. How Well Does Design Education Prepare People for Industry? (Ed) **MD 675**; Projects Valuable in Teaching Design (Ed) **MD 673**
Westphal, R. V. A New Probe for Mesurement of Velocity and Wall Shear Stress in Unsteady, Reversing Flow **F 478**
Westwater, J. W. Steam Condensation on Various Gold Surfaces (81-HT-15) **HT 685**
Wet Bulb Depression
A General Theory of Wet Surface Heat Exchangers and its Application to Regenerative Evaporative Cooling **HT 579**
Wheel Deflection
The Role of Wheel-Work Deflection in Grinding Operations (80-WA/PROD-11) **I 73**
Wheel Rail Contact Stresses
Laboratory Investigation of Wheel Rail Contact Stresses for U.S. Freight Cars (80-WA/RT-8) **I 246**
Wheelclimb Derailment
Evaluation of Time-Duration Dependent Wheel Load Criteria for Wheelclimb Derailment (80-WA/DSC-21) **DS 219**
Wheeler, L. Crack Path Prediction for a Kinked Crack in the Neighborhood of a Circular Inclusion in an Infinite Medium (81-APM-31) **AM 313**
Wheels
Cyclic Behavior of Class U Wheel Steel (80-WA/RT-9) **I 113**
Wheelset Lateral Dynamics
Measurements and Observations on Wheelset Lateral Dynamics of Locomotives on Tangent Track **DS 375**
Wheelsets
A Comparison of the Stability and Curving Performance of Radial and Conventional Rail Vehicle Trucks **DS 191**
Influence of Wheel/Rail Contact Geometry on Large Amplitude Wheelset Equations of Motion **DS 211**
Whirl Instability
On the Steady State and Dynamic Performance Characteristics of Floating Ring Bearings (80-C2/Lub-17) **L 389**; (D) (AC) **L 397**
Whirling
Blade Excitation by Elliptical Whirling in Viscous-Damped Jet Engines (80-GT-168) **P 328**
Rotordynamic Instability in Centrifugal Compressors—Are All the Excitations Understood? (80-GT-149) **P 288**
White, A. R. Water Tempered Cleaning Medium for Sootblowers **P 561**
White, B. R. Low-Reynolds-Number Turbulent Boundary Layers **F 624**
White, F. M. Editorial **F 380**; Review—Basic Research Needs in Fluid Mechanics **F 509**; *(reviewer)* Small and Micro Hydroelectric Plants (BR) **F 484**; Viscous Flow Drag Reduction (BR) **F 485**
White, J. E. Prediction of Growth Parameters of Frost Deposits in Forced Convection **HT 3**
White, R. A. Evaluation of Vehicle Drag Parameters From Coastdown Experiments Conducted Under Nonideal Environmental Conditions **F 133**; (D) **F 140**; (AC) **F 141**
White, R. C., Jr. Guideway-Suspension Tradeoffs in Rail Vehicle Systems **DS 237**
White Noise
Stabilization of an Unstable Linear System by Parametric White Noise (BN) **AM 198**
Whitehead, J. R. Methods of Predicting Material Life in Fatigue (Ed) **MT 81**
Whitelaw, J. H. A Round Jet Normal to a Crossflow (80-WA/FE-18) **F 142**
Whitman, A. M. Calculation of the Response Impulsively Excited Oscillator in an Infinite Acoustic Fluid **AM 745**
Whitman, G. D. Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) **PVT 85**
Whitney, A. K. Nonlinear Transient Motion of Deep Ocean Mining Pipe **ERT 2**; Vibrations of Long Marine Pipes due to Vortex Shedding (81-Pet-29) **ERT 231**; (Er) **ERT 290**
Wiedermann, A. H. A Hybrid Numerical Method for Homogeneous Equilibrium Two-Phase Flows in One Space Dimension (80-C2/PVP-51) **PVT 20**
Wiederrich, J. L. Design and Evaluation of Drag-Link Driven Cams (80-DET-38) **MD 592**; Residual Vibration Criteria Applied to Multiple Degree of Freedom Cam Followers (80-DET-3) **MD 702**
Wiggert, D. C. Cavitation Inception in Spool Valves **F 564**; (D) **F 575**; (AC) **F 576**
Wilbeck, J. S. The Development of a Substitute Bird Model (81-GT-23) **P 725**
Wilcock, D. F. Design of Efficient Turbulent Thrust Bearings III. Self-Pressurized Design **L 459**
Wilde, D. J. Optimal Design Under Uncertainty (CR) **MD 677**
Wiley, R. S. Esophageal Accelerometer—Indicator of Cardiovascular Function **BE 160**
Wilkesmann, H. Calculation of Cylindrical Worm Gear Drives of Different Tooth Profiles (80-C2/DET-23) **MD 73**
Wilkowski, G. M. Evaluation of Tensile Failure of Girth Weld Repair Grooves in Pipe Subjected to Offshore Laying Stresses (80-Pet-74) **ERT 48**; A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part II: Experimental Verification on a Type 304 Stainless Steel Pipe (80-WA/PVP-4) **PVT 359**
Willmott, A. J. *(author)* Thermal Energy Storage and Regeneration (BR) **SE 178**; Use of Lead/Lag Approximations in Modeling Thermal Regenerator Systems **DS 49**
Wills, J. G. *(author)* Lubrication Fundamentals (Mechanical Engineering Series, Vol. 3) (BR) **L 471**
Wilms, E. V. Boundary Condition Independence in Coupled Thermoelasticity (BN) **AM 974**; Planar Motion of a Rigid Body With a Friction Rotor (BN) **AM 205**
Wilputte, Ph. Influence of Mach Number and End Wall Cooling on Secondary Flows in a Straight Nozzle Cascade (80-GT-52) **P 257**; (D) **P 263**; (AC) **P 264**
Wilson, A. D. The Fatigue and Toughness Properties of a C-Mn-Cb Plate Steel (Er) **MT 263**
Wilson, D. A. A Statistical Investigation of Microstructure and Crack Growth in Titanium Alloys (80-GT-125) **P 180**
Wilson, K. Oxygen Facilities for Synthetic Fuel Projects **I 409**
Wilson, N. W. Melting of a Vertical Ice Wall by Free Convection into Fresh Water **HT 13**
Wilson, P. M. An Experimental Investigation of the Pressures at the Edge of a Gas Bearing Pocket **L 593**
Wilson, S. A. Low Cycle Fatigue of Commercial Piping Steels in a BWR Primary Water Environment **MT 15**
Wind Energy
Overview of Wind Energy Systems: Issues in Development and Application **SE 3**
Wind Energy Systems
A Numerical Model for the Flow Within the Tower of a Tornado-Type Wind Energy System **SE 299**
Wind Loading
Mean Wind Loading on Parabolic-Trough Solar Collectors **SE 313**
Wind-Tunnel Data
Low-Reynolds-Number Turbulent Boundary Layers **F 624**
Wind-Tunnel Walls
Effect of Wind-Tunnel Walls on the Drag of a Sphere **F 461**
Wind Tunnels
Development of a Large-Scale Wind Tunnel for the Simulation of Turbomachinery Airfoil Boundary Layers (81-GT-6) **P 678**
Wind Turbines
Flow Field Analysis and Performance Wind Turbines Employing Slotted Diffusers **SE 17**
One Viewpoint Concerning Unit Size in the Development of Wind Turbines **SE 306**
Overview of Wind Energy Systems: Issues in Development and Application **SE 3**
Winding
Some Problems in Winding Geometry **I 418**
Windmill Blades
Application of Orthotropic Plate Theory to Windmill Blade Design **MD 892**
Windmilling
Calculation of Windmilling Characteristics of Turbojet Engines (80-GT-50) **P 1**
Windpower
One Viewpoint Concerning Unit Size in the Development of Wind Turbines **SE 306**
Winer, W. O. An Experimental Evaluation of the Hamrock and Dowson Minimum Film Thickness Equation for Fully Flooded EHD Point Contacts (80-C2/Lub-38) **L 284**; (D) **L 294**; A Film Thickness Analysis for Line Contacts Under Pure Rolling Conditions With a Non-Newtonian Rheological Model (80-C2/Lub-36) **L 305**; (D) **L 313**; (AC) **L 314**
Wing Configurations
A Method for the Calculation of 3D Boundary Layers on Practical Wing Configurations **F 104**
Wingard, L. B., Jr. *(editor)* Enzyme Engineering, Future Directions (BR) **BE 217**
Winn, C. B. Optimal Control of Mass Flow Rates in Flat Plate Solar Collectors **SE 113**
Winn, R. C. Optimal Control of Mass Flow Rates in Flat Plate Solar Collectors **SE 113**
Winter, E. R. F. Prediction of Transient Inception of Boiling in Terms of a Heterogeneous Nucleation Theory (80-HT-113) **HT 69**
Winter, H. Calculation of Cylindrical Worm Gear Drives of Different Tooth Profiles (80-C2/DET-23) **MD 73**; Some Factors Influencing the Pitting, Micro-Pitting (Frosted Areas) and Slow Speed Wear of Surface Hardened Gears (80-C2/DET-89) **MD 499**
Wire, G. L. A State Variable Analysis of Inelastic Deformation of Thin Walled Tubes **MT 305**
Wire Rope Terminations
Efficiency of Wire Rope Terminations **MT 184**
Wisler, D. C. Optical Advances in Laser Transit Anemometry **P 438**
Witte, L. C. Natural Convection and Sidewall Losses in Trapezoidal Groove Collectors **SE 187**
Wittenberg, K. Fluid Flow Through a Class of Highly-Deformable Porous Media Part II: Experiments With Water **F 440**; (D) **F 438**; (AC) **F 439**
Wittenberg, L. J. Construction and Startup Performance of the Miamisburg Salt-Gradient Solar Pond **SE 11**
Wnuk, M. P. Stable Phase of Ductile Fracture in Two and Three Dimensions, Final Stretch Model (81-WA/APM-5) **AM 500**
Wolfson, R. L. T. Experimental Comparison of Control Strategies for Solar Energy Systems In-

corporating Dual Storage Tanks **SE 47**

Wong, C. J. Fracture and Wear of Diamond Cutting Tools (81-WA/Mat-3) **MT 341**

Wong, G. R. Application of Hydroelastic Waves to the Removal of Small Gallstones **BE 79**

Woo, H. H. Creep Rupture Bending Test of 20 Percent Cold-Prestrained Ni-Fe-Cr Alloy Straight Tubes at 1100 F (593C) (80-C2/PVP-18) **PVT 337**

Woo, S. L-Y. The Time and History-Dependent Viscoelastic Properties of the Canine Medial Collateral Ligament **BE 293**

Wood

Single Grit Simulation of the Abrasive Machining of Wood (80-WA/PROD-2) **I 1**

Woodruff, D. W. Steam Condensation on Various Gold Surfaces (81-HT-15) **HT 585**

Woomer, E. The Balancing of Rotating Shafts by Quadratic Programming (80-DET-45) **MD 831**

Working Fluids

Closed-Cycle Gas Turbine Working Fluids (80-GT-135) **P 229**

Creep Rupture Behavior of Selected Turbine Materials in Air, Ultra-High Purity Helium, and Simulated Closed Cycle Brayton Helium Working Fluids (80-GT-173) **P 331**

A Detailed Transient Model of an OTEC Evaporator **P 539**

Workpiece Materials

The Grinding of Workpiece Materials Exhibiting High Adhesion—Part 2: Forces **I 156**

Workpieces

The Grinding of Workpieces Exhibiting High Adhesion—Part 1: Mechanisms **I 144**

Workspaces

The Workspaces of a Mechanical Manipulator (80-DET-107) **MD 685**

Worm Gear Drives

Calculation of Cylindrical Worm Gear Drives of Different Tooth Profiles (80-C2/DET-23) **MD 73**

Wormley, D. N. Entering the Thrid Decade of Fluidics—an Academic Perspective (F) **DS 301**; A Fluidic, Hydraulic Servovalve **DS 331**

Worthy, J. G. B. The Design, Development and Operation of Gas Turbine Radio Telemetry Systems **P 473**

Wound Fibers

Some Problems in Winding Geometry **I 418**

Wrapping Tightness

Evaluation of Thermal Conductivity in Layered Vessels (82-PVP-1) **PVT 307**

Wright, D. E. Closed-Cycle Gas Turbine Working Fluids (80-GT-135) **P 220**

Wright, J. D. Analytical Dynamic Modeling of Line-Focus Solar Collectors **SE 244**

Wright, P. K. Abrasive Wear in Machining: Experiments With Materials of Controlled Microstructure **MT 151**

Writing

Writing for "The Audience" (80-C2/DET-125) **MD 342**

Wu, C. H. Large Plane-to-Surface Deformations of Membranes With Inclusion **AM 357**

Wu, H. C. Endochronic Description of Cyclic Hardening Behavior for Metallic Materials **MT 212**

Wu, S. M. Dynamic Analysis of Milling Machine by Torque Signals **I 235**; On-Line Hole Quality Evaluation for Drilling Composite Material Using Dynamic Data (80-WA/PROD-16) **I 119**

Wu, Y. P. Application of Hydroelastic Waves to the Removal of Small Gallstones **BE 79**

Wu, Y.-T. Thermoelastic and Dynamic Phenomena in Seals (80-C2/Lub-9) **L 253**

Wuerer, J. E. Prediction and Measurement of Mass, Heat, and Momentum Transport in a Nonreacting Turbulent Flow of a Jet in an Opposing Stream **F 127**

Wyler, J. S. An Investigation Into the Performance of Two Inlet Nozzles for Flow Measurement (D) (AC) **F 73**

Wynnyckyj, J. R. A Furnace Wall Ash Monitoring System for Coal Fired Boilers (80-WA/Fu-1) **P 532**

Y

Yamada, M. Harmonic Waves in Fiber-Reinforced Orthotropic Elastic Composites (BN) **AM 967**

Yamada, S. E. On Plastic Strain in Porous Materials (BN) **AM 976**

Yamada, T. Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part I: Plain Milling With a Single-Toothed Helical Cutter (80-WA/Prod-4) **I 165**; Part II: Plain Milling With a Multi-Toothed Helical Cutter (80-WA/Prod-5) **I 174**

Yamagami, K. Infiltration of a Fluid Into a Dry Poro-Elastic Body **AM 259**

Yamaguchi, K. Frictional Properties of a Surface Covered With a Soft Metal Film—Part 1: Experiments on Friction Between a Single Protuberance and a Surface **L 236**; A Method to Measure Contact Pressure Between Metallic Surfaces by Changes in Surface Roughness (80-WA/Prod-18) **I 210**; Relationships Between Cutting Force Variations and Cutting Factors in Plain Milling Operations—Part I: Plain Milling With a Single-Toothed Helical Cutter (80-WA/Prod-4) **I 165**; Part II: Plain Milling With Multi-Toothed Helical Cutter (80-WA/Prod-5) **I 174**

Yamasaki, T. Prediction of Gaseous Cavitation Occurrence in Various Liquids Based on Two-Phase Flow Analogy **F 551**

Yan, H. S. Linkage Characteristic Polynomials: Definitions, Coefficients by Inspection (80-DET-8) **MD 578**

Yan Li-Tang Experiments on the Vibration Characteristics of a Rotor With Flexible, Damped Support (80-GT-124) **P 174**

Yan, S. J. Enhanced Oil Recovery by Flooding With Dilute Aqueous Chemical Solutions **ERT 285**

Yang, A. T. On the Principle of Transference in Three-Dimensional Kinematics (80-DET-88) **MD 652**; Stress Fluctuation in High Speed Mechanisms (80-DET-21) **MD 736**

Yang, J. F. C. Transient Study of Couple Stress Effects in Compact Bone: Torsion **BE 275**

Yang, R.-J. Application of the Method of Integral Relations to the Calculation of Two-Dimensional Incompressible Turbulent Boundary Layer **AM 701**

Yang, W. H. How to Optimally Support a Plate (BN) **AM 207**

Yang, Z. Cavitation Inception Tests on Axisymmetric Headforms **F 268**

Yannone, R. A. Ten Years of Digital Computer Control of Combustion Turbines (80-GT-78) **P 54**

Yao, L. S. A Horizontal Flow Past a Partially Heated, Infinite Vertical Cylinder **HT 546**

Yao, S.-C. Convective Heat Transfer to Turbulent Droplet Flow in Circular Tubes **HT 679**

Yatomi, C. Note on the Energy-Release Rate for a Crack Starting From the Apex of a Wedge (BN) **AM 194**

Yatsko, G. O. Creep Rupture Behavior of Selected Turbine Materials in Air, Ultra-High Purity Helium, and Simulated Closed Cycle Brayton Helium Working Fluids (80-GT-173) **P 331**

Yawing

Modeling and Dynamic Response of Maglev Vehicles Subjected to Crosswind Gusts (80-WA/DSC-8) **DS 251**

Optimum Balancing of Combined Pitching and Yawing Moments in High-Speed Machinery (80-DET-7) **MD 571**

Yelle, H. Calculation of Contact Ratios for Plastic/Plastic or Plastic/Steel Spur Gear Pairs (80-C2/DET-105) **MD 528**

Yen, C.-F. A Theory of Multiaxial Anisotropic Viscoplasticity (81-APM-21) **AM 276**

Yen, C.-L. Nonlinear Response of an Elastic Cylindrical Shell to a Transient Acoustic Wave (81-APM-10) **AM 15**

Yeung, J. Y. Dynamic Response of a Cantilever Pile to Vortex Shedding in Regular Waves **ERT 32**

Yeung, W.-S. Application of the Method of Integral Relations to the Calculation of Two-Dimensional Incompressible Turbulent Boundary Layer **AM 701**

Yield Stress

Strength of the Surface Layer of Mild Steel **MT 282**

Yin-Yang Bodies

Heat Conduction through "Yin-Yang" Bodies (TN) **HT 600**

Yip, M. C. Endochronic Description of Cyclic Hardening Behavior for Metallic Materials **MT 212**

Yoder, P. J. On the Formulation of Strain-Space Plasticity With Multiple Loading Surfaces (81-WA/APM-20) **AM 773**

Yokoyama, M. Optimization Anaiysis of Automated Assembly Systems (80-WA/Prod-20) **I 224**

Yokoyama, Y. Study on Vibratory Feeders: Calculation of Natural Frequency of Bowl-Type Vibratory Feeders **MD 249**

Yoshida, A. Effects of Case Depth and Relative Radius of Curvature on Surface Durability of Case-Hardened Chromium Molybdenum Steel Roller (80-C2/DET-37) **MD 474**

Yoshimura, T. Application of Model Reference Adaptive Techniques to a Class of Nonlinear Systems **DS 158**; A Diagnosis Method for Linear Stochastic Systems With Parametric Failures **DS 28**; A Discrete-Time Adaptive Filter for Stochastic Distributed Parameter Systems **DS 266**

Yossifon, S. The Grinding of Workpiece Materials Exhibiting High Adhesion—Part 2: Forces **I 156**; The Grinding of Workpieces Exhibiting High Adhesion—Part 1: Mechanisms **I 144**

Yost, J. O. The Hybrid Diffuser (80-GT-136) **P 229**

Young, J. A. Lateral Dynamics of a Rail Transit Vehicle: A Comparison of Experimental and Theoretical Results **DS 39**

Young, M. F. An Investigation of Thermal Stratification in Horizontal Storage Tanks **SE 286**; Performance Characteristics of a Thermosyphon Solar Domestic Hot Water System **SE 193**

Youngdahl, C. K. Pressure Transient Analysis of Elbow-Pipe Experiments Using the PTA-2 Computer Code (80-C2/PVP-22) **PVT 33**; Transient Cavitation in Fluid-Structure Interactions (80-C2/PVP-23) **PVT 345**

Yu, B. K. Vibrations of Long Marine Pipes due to Vortex Shedding (81-Pet-29) **ERT 231**; (Er) **ERT 290**

Yu, J. S. Dispersion in Laminar Flow Through Tubes by Simultaneous Diffusion and Convection **AM 217**

Yuen, W. W. Application of the P-1 Approximation to Radiative Heat Transfer in a Nongray Medium (TN) **HT 182**; A Simplified Approach to the Evaluation of the Geometric-Mean Transmittance and Absorptance for Gas Enclosures **HT 808**

Yuruzume, I. Bending Fatigue Tests of High Speed Spur Gears (80-C2/DET-87) **MD 466**

Z

Zahoor, A. Ductile Tearing Instability of a Center-Cracked Panel of an Elastic-Plastic Strain Hardening Material **MT 46**; A Plastic Fracture Instability Analysis of Wall Breakthrough in a Circumferentially Cracked Pipe Subjected to Bending Loads **MT 194**; A Plastic Fracture Mechanics Prediction of Fracture Instability in a Circumferentially Cracked Pipe in Bending—Part I: J-Integral Analysis (80-WA/PVP-3) **PVT 352**; Part II: Experimental Verification on a Type 304 Stainless Steel Pipe (80-WA/PVP-4) **PVT 359**

Zantopulos, H. Line Contact Deformation: A Cylinder Between Two Flat Plates (80-C2/Lub-50) **L 21**

Zaretsky, E. V. Endurance and Failure Characteristics of Modified Vasco X-2, CBS 600 and AISI 9310 Spur Gears (80-C2/DET-56) **MD 506**; (D) **MD 514**; (AC) **MD 514, 515**; Some Limitations in Applying Classical EHD Film Thickness Formulas to a High-Speed Bearing (80-C2/Lub-13) **L 295**; (D) **L 301**; (AC) **L 303**

Zebib, A. Double Diffusive Instability in a Vertical Layer of a Porous Medium (TN) **HT 179**

Zedan, M. F. Dynamic Response of a Cantilever Pile to Vortex Shedding in Regular Waves **ERT 32**

Zhao Qi Shou Calculation of Windmilling Characteristics of Turbojet Engines (80-GT-50) **P 1**

Zielinski, R. E. Field Results From a Linked Vertical Well UCG Test in Deep, Thin-Seam Bituminous Coal **ERT 277**

Ziels, B. D. Water Tempered Cleaning Medium for Sootblowers **P 561**

Zinc Dithiophosphate
Antiwear Mechanism of ZDDP in the Presence of Calcium Sulfonate Detergent **L 488**; (D) **L 494, 495**; (AC) **L 495**

Zobens, A. Hydrodynamic Lubrication in Wavy Contacting Face Seals—A Two Dimensional Model (80-C2/Lub-10) **L 578**; (D) (AC) **L 586**

Zohoor, H. Closure Equations for a Six-Link Coupler-Drive Mechanism **MD 236**

Zubair, S. Effect of Finite Width on Heat Transfer and Fluid Flow About an Inclined Rectangular Plate (D) **HT 824**; (AC) **HT 825**; Force Convection Heat Transfer at an Inclined and Yawed Square Plate—Application to Solar Collectors (D) **HT 824**; (AC) **HT 825**; Local Heat Transfer and Fluid Flow Characteristics for Airflow Oblique or Normal to Square Plate (D) **HT 824**; (AC) **HT 825**

Zvirin, Y. Experimental and Analytical Investigation of a Natural Circulation System with Parallel Loops **HT 645**

C 26

0 5E2
1 3E5
2 235
3 E28
4 283
5 5E2
6 3E5

0 5E2
1 3E5
2 235
3 E28
4 283
5 5E2
6 3E5